Supreme Court, U.S.
FILED
AUG 21 1992
OFFICE OF THE CLERK

No. 91-2031

In the Supreme Court of the United States

OCTOBER TERM, 1992

JOY TECHNOLOGIES, INC., PETITIONER

v.

HARRY F. MANBECK, JR., COMMISSIONER OF PATENTS AND TRADEMARKS

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR THE RESPONDENT IN OPPOSITION

KENNETH W. STARR
Solicitor General

STUART M. GERSON
Assistant Attorney General

WILLIAM KANTER
FRANK A. ROSENFELD
Attorneys
Department of Justice
Washington, D.C. 20530
(202) 514-2217

QUESTION PRESENTED

Whether a patent owner is entitled to a jury trial under the Seventh Amendment when he sues the Commissioner of Patents and Trademarks under 35 U.S.C. 145 and 306, seeking judicial review of an adverse decision by the Board of Patent Appeals and Interference within the Patent and Trademark Office.

TABLE OF CONTENTS

	Page
Opinions below	1
Jurisdiction	1
Statement	2
Argument	5
Conclusion	9
Appendix A	1a
Appendix B	13a
Appendix C	43a

TABLE OF AUTHORITIES

Cases:

Atlas Roofing Co. v. *Occupational Safety & Health Review Comm'n*, 430 U.S. 442 (1977)	8
Butterworth v. *Hoe*, 112 U.S. 50 (1884)	6
Crowell v. *Benson*, 285 U.S. 22 (1932)	6
Etter, In re, 756 F.2d 852 (Fed. Cir.), cert. denied, 474 U.S. 828 (1985)	2
Glidden Co. v. *Zdanok*, 370 U.S. 530 (1962)	5
Granfinanciera, S.A. v. *Nordberg*, 492 U.S. 33 (1989)	4, 6, 7-8
Hoover v. *Coe*, 325 U.S. 79 (1945)	6
Joy Mfg. Co. v. *National Mine Service Co.*, 810 F.2d 1127 (Fed. Cir. 1987)	2, 3
Lehman v. *Nakshian*, 453 U.S. 156 (1981)	5
McElrath v. *United States*, 102 U.S. 426 (1980)	5
Patlex Corp. v. *Mossinghoff*, 758 F.2d 594, modified, 771 F.2d 480 (Fed. Cir. 1985)	4
Richardson v. *Suzuki Motor Co.*, 868 F.2d 1226 (Fed. Cir.), cert. denied, 493 U.S. 853 (1989)	7
Thomson Spot Welder Co. v. *Ford Motor Co.*, 265 U.S. 445 (1924)	7
Tull v. *United States*, 481 U.S. 412 (1987)	4, 6
Wood & Brundage, Ex parte, 22 U.S. (9 Wheat.) 603 (1824)	7

Constitution and statutes: Page

U.S. Const.:
Amend. V 8
Amend. VII 4, 5, 6, 7, 8
Act of Dec. 12, 1980, Pub. L. No. 96-517, 94 Stat. 3015:
1, 94 Stat. 3015 (35 U.S.C. 301-307) 2
§ 8(b), 94 Stat. 3027 2
Rev. Stat. § 4915 6
35 U.S.C. 3 6
35 U.S.C. 6 6
35 U.S.C. 145 ..... 3, 5, 6
35 U.S.C. 305 2
35 U.S.C. 306 ..... 3, 5

In the Supreme Court of the United States

OCTOBER TERM, 1992

No. 91-2031

JOY TECHNOLOGIES, INC., PETITIONER

v.

HARRY F. MANBECK, JR., COMMISSIONER OF PATENTS AND TRADEMARKS

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR THE RESPONDENT IN OPPOSITION

OPINIONS BELOW

The opinion of the court of appeals (Pet. App. A1-A13) is reported at 959 F.2d 226. The opinions of the district court (App., *infra*, 1a-76a) are reported at 12 U.S.P.Q.2d (BNA) 1112, 732 F. Supp. 227, and 751 F. Supp. 225.

JURISDICTION

The judgment of the court of appeals (Pet. App. B1) was entered on March 20, 1992. The petition for a writ of certiorari was filed on June 17, 1992. The

jurisdiction of this Court is invoked under 28 U.S.C. 1254(1).

STATEMENT

1. On August 16, 1977, the Commissioner of Patents and Trademarks issued patent No. 4,042,864 (the '864 patent) to petitioner for an AC/DC traction drive system for coal mining equipment. In April 1980, petitioner sued National Mine Service, Inc. (National), alleging that National was infringing petitioner's patent. The parties settled that action in 1984. Under the settlement, National promised that it would not bring suit to challenge the validity of petitioner's patent. Pet. App. A2-A3; see *Joy Mfg. Co.* v. *National Mine Service Co.*, 810 F.2d 1127, 1127-1128 (Fed. Cir. 1987).

In 1980, after the issuance of the '864 patent, Congress enacted legislation authorizing the Commissioner, either on his own initiative or at the request of any person, to reexamine any previously issued patent to determine whether the patent was correctly issued. Act of Dec. 12, 1980 (the 1980 Act), Pub. L. No. 96-517, § 1, 94 Stat. 3015 (codified at 35 U.S.C. 301-307). The 1980 Act took effect on July 1, 1981, and applied to all patents then in force or issued thereafter. § 8(b), 94 Stat. 3027. In reexamination proceedings under the 1980 Act, the same standards are applied as in the initial examination of a patent application. *In re Etter*, 756 F.2d 852 (Fed. Cir.), cert. denied, 474 U.S. 828 (1985); see also 35 U.S.C. 305 ("reexamination will be conducted according to the procedures established for initial examination").

National filed a request under the 1980 Act asking the Commissioner to reexamine the '864 patent, which

the Commissioner granted.[1] Upon reexamination, the Board of Patent Appeals and Interferences (Board) affirmed a patent examiner's determination that certain claims of the '864 patent were patentable, but others were not. See Pet. App. A3.

2. Petitioner then sought judicial review of the Board's decision in the United States District Court for the District of Columbia pursuant to 35 U.S.C. 145 and 306.[2] In its initial opinion, the district court rejected petitioner's demand for a jury trial, holding, as a matter of statutory interpretation, that "there is no right to a jury trial under 35 U.S.C. § 145." App., *infra*, 4a. In the same opinion, the court held that the Commissioner's decision to reexamine a patent under the 1980 Act is committed to agency discretion by law and is therefore unreviewable. *Id.* at 4a-6a. Finally, the court held that the reexamination procedure was not unconstitutionally retroactive as applied to patents issued prior to the effective date of the 1980 Act. *Id.* at 6a-12a. Petitioner challenges only the first holding in this Court.

---

[1] Petitioner filed a motion in the terminated infringement suit seeking to enjoin National from pursuing its request for reexamination. The district court denied that motion, and the court of appeals affirmed. *Joy Mfg. Co.* v. *National Mine Service Co.*, 810 F.2d at 1129-1130.

[2] Section 306 of Title 35 provides that "[t]he patent owner involved in a reexamination proceeding * * * may seek court review under the provisions of sections 141 to 145 of this title, with respect to any decision adverse to the patentability of any original or proposed amended or new claim of the patent." Section 145, in turn, authorizes the patent holder to seek judicial review of an adverse decision by bringing a "civil action against the Commissioner in the United States District Court for the District of Columbia."

In a later order, the district court denied the Commissioner's motion for summary judgment, holding that there was an issue of material fact over the patent's obviousness. App., *infra*, 23a-37a. After a bench trial, the district court entered judgment for the Commissioner, upholding the Board's determination that certain claims of the '864 patent were unpatentable. *Id.* at 43a-76a.

3. The court of appeals affirmed. Pet. App. A1-A13. As relevant here, the court held that petitioner did not have a Seventh Amendment right to a jury trial in its action challenging the Board's decision upon reexamination of the '864 patent. In so holding, the court relied on its prior decision in *Patlex Corp.* v. *Mossinghoff*, 758 F.2d 594, 603-605, modified, 771 F.2d 480 (Fed. Cir. 1985). Pet. App. A7-A8. The court rejected petitioner's contention that *Patlex* was no longer good law following this Court's decisions in *Granfinanciera, S.A.* v. *Nordberg*, 492 U.S. 33 (1989), and *Tull* v. *United States*, 481 U.S. 412 (1987). On the contrary, the court of appeals determined that *Granfinanciera* "affirms the basic underpinning of *Patlex*," which was that "cases involving 'public rights' * * * [do not] implicat[e] the Seventh Amendment right to jury trial." Pet. App. A8. The court found that nothing in *Granfinanciera* "cast[] doubt on the *Patlex* court's holding that a valid patent involves public rights." Pet. App. A9-A10. The court also determined that petitioner's reliance on *Tull* was misplaced. *Id.* at A10. The court observed that in *Tull* this Court reaffirmed the principle that "the Seventh Amendment preserves the right to a jury trial in actions analogous to 'Suits at common law.'" Pet. App. A10 (quoting *Tull*, 481 U.S. at

417). That principle did not apply here, the appellate court explained, because petitioner's challenge to the Commissioner's reexamination decision was not analogous to a suit at common law. Pet. App. A10-A11.[3]

ARGUMENT

Petitioner's sole contention is that it was entitled to a jury trial under the Seventh Amendment in this suit challenging the Board's partial invalidation of petitioner's patent. The court of appeals correctly rejected that contention, and its decision does not conflict with any decision of this Court or any other court of appeals. Further review is therefore not warranted.

Petitioner was not entitled to a jury trial because the present action is an action against the federal government. See 35 U.S.C. 145 and 306. "It has long been settled that the Seventh Amendment right to trial by jury does not apply in actions against the Federal Government." *Lehman* v. *Nakshian*, 453 U.S. 156, 160 (1981). "[S]uits against the Government, requiring as they do a legislative waiver of immunity, are not 'suits at common law' within the meaning of the Seventh Amendment." *Glidden Co.* v. *Zdanok*, 370 U.S. 530, 572 (1962) (Harlan, J., for plurality), citing *McElrath* v. *United States*, 102 U.S. 426, 439-440 (1880).

Moreover, petitioner's Seventh Amendment claim must be rejected under this Court's decisions concern-

---

[3] The court of appeals upheld the district court's ruling on the merits, stating that the district court had "dealt fully and correctly with all [of petitioner's] * * * arguments and we discern no error." Pet. App. A12. In this Court, petitioner does not renew its challenge to the district court's ruling on the merits.

ing "public rights." In *Granfinanciera*, this Court "adhere[d] to th[e] general teaching" of its earlier decisions that the Seventh Amendment right to a jury does not attach in cases involving "public rights." 492 U.S. at 51. The Court also reaffirmed that the term "public rights" at the least includes "cases that 'arise between the Government and persons subject to its authority in connection with the performance of the constitutional functions of the executive or legislative departments.'" *Id.* at 51 n.8 (quoting *Crowell* v. *Benson*, 285 U.S. 22, 50 (1932)). This is such a case. Petitioner's action challenges the Commissioner's exercise of his statutory duty to execute the patent laws. See 35 U.S.C. 3 (Commissioner is appointed by the President with the advice and consent of the Senate); 35 U.S.C. 6 (Commissioner "shall superintend or perform all duties required by law respecting the granting and issuing of patents").[4]

---

[4] Further support for rejecting petitioner's Seventh Amendment claim is found in this Court's decisions stating that there is no right to a jury trial in actions of an equitable nature. See, *e.g.*, *Tull*, 481 U.S. at 417-418. Judicial review of decisions by the Board upon reexamination of a patent is governed by 35 U.S.C. 145. Section 145 also governs review of Board decisions upholding the Commissioner's refusal to issue a patent in the first place. Section 145 is based on Section 4915 of the Revised Statutes, which provided for judicial review by a bill in equity to determine an applicant's right to a patent. See *Hoover* v. *Coe*, 325 U.S. 79, 83 (1945); *Butterworth* v. *Hoe*, 112 U.S. 50, 61-62 (1884). In light of the historically equitable nature of an action under 35 U.S.C. 145, it is not surprising that no court has held that an applicant for a patent has a right to a jury trial in a proceeding to review the Commissioner's refusal to issue a patent. Likewise, no court has ever held that a patent owner has a right to a jury trial in a proceeding to review an adverse decision reexamining a previously issued patent.

To be sure, the central issue in an action challenging a reexamination decision of the Board—*i.e.*, the validity of a previously issued patent—may also arise in actions to which the Seventh Amendment right to a jury applies. Specifically, when a patent holder sues a private party alleging infringement, the alleged infringer may raise the invalidity of the patent as a defense, and the Seventh Amendment provides the right to have all questions of fact raised by that defense presented to a jury. See *Thomson Spot Welder Co.* v. *Ford Motor Co.*, 265 U.S. 445, 446 (1924); *Richardson* v. *Suzuki Motor Co.*, 868 F.2d 1226 (Fed. Cir.), cert. denied, 493 U.S. 853 (1989). That does not mean, however, that a patent holder has the right to have the issue of a patent's validity tried before a jury regardless of the context in which the issue arises.[5] As this Court observed in *Granfi-*

---

[5] Petitioner's reliance on *Ex parte Wood & Brundage*, 22 U.S. (9 Wheat.) 603 (1824), is misplaced. Petitioner asserts (Pet. 26) that in *Wood*, this Court "condemned" on Seventh Amendment grounds a statute, since repealed, that permitted a private party to sue a patent holder in district court to attack the validity of the patent. Contrary to petitioner's assertion, *Wood* did not involve a Seventh Amendment claim. Rather, it raised only a question of statutory construction: namely, whether the statute permitted a court to issue a ruling invalidating the patent without first ordering the patent holder to show cause why the patent was valid. 22 U.S. (9 Wheat.) at 607. The Court held that the district court was required to issue a show cause order. *Id.* at 609-615. In so holding, the Court remarked that the patent holder's factual contentions in response to the show cause order would be tried before a jury. *Id.* at 615. That remark did not represent a holding by the Court and in any event is inapposite here. The Court's remark concerned an action that was entirely between private parties, and that would accordingly be much

nanciera, 492 U.S. at 53, "[i]n *Atlas Roofing* [*Co.* v. *Occupational Safety & Health Review Comm'n*, 430 U.S. 442,] 458 [(1977)], we noted that Congress may effectively supplant a common-law cause of action carrying with it a right to a jury trial with a statutory cause of action shorn of a jury trial right if that statutory cause of action inheres in, or lies against, the Federal Government in its sovereign capacity." That observation fully applies here: That a jury sometimes must decide the issue of the validity of a patent in a suit between private parties does not mean that the issue must be decided by a jury in a suit between a private party and a federal agency. Petitioner's argument to the contrary is without merit.[6]

---

more analogous to a common law infringement action than an action against the Commissioner seeking review of a reexamination decision.

[6] Petitioner suggests throughout its petition that its claim to a jury trial is strengthened by the fact that the reexamination procedure allows a court to uphold the Board's invalidation of a patent that has already issued. See Pet. 21, 24, 26, 28, 31-32, 34. Yet petitioner never explains how that fact strengthens his Seventh Amendment argument. As we have explained, note 4, *supra*, proceedings to review either a Board decision upholding the Commissioner's refusal to issue a patent in the first place or a Board decision invalidating a patent upon reexamination are equitable in nature; there is thus no right to a jury trial in either context. The fact of the patent's prior issuance does bear on the retroactivity challenge that petitioner made in the courts below based on the Fifth Amendment, but petitioner does not renew that challenge in this Court. In any event, the courts below properly rejected petitioner's retroactivity argument, and it warrants no further review. App., *infra*, 6a-12a.

CONCLUSION

The petition for a writ of certiorari should be denied.

Respectfully submitted.

KENNETH W. STARR
Solicitor General

STUART M. GERSON
Assistant Attorney General

WILLIAM KANTER
FRANK A. ROSENFELD
Attorneys

AUGUST 1992

APPENDIX A

UNITED STATES DISTRICT COURT
DISTRICT OF COLUMBIA

No. 88-3656-OG

JOY TECHNOLOGIES

v.

QUIGG

Decided July 23, 1989

Gasch, J.

This action arises under the patent laws. Plaintiff Joy Technologies ("Joy") challenges the reexamination by the Patent and Trademark Office ("PTO") of a patent owned by Joy Technologies. Plaintiff contends that both the initial decision to conduct a reexamination and the subsequent adverse decision from that proceeding were arbitrary and capricious and unconstitutional. The matter is before the Court on the defendant Commissioner of Patents and Trademarks' motion for partial summary judgment.

The material facts upon which defendant's motion is based are not in dispute. In 1977 Joy Technologies received, by assignment, Patent No. 4,042,864 ("the '864 patent") for a Traction Drive Control System. The invention is an improvement to machinery used in underground coal mines. In 1985, one of plaintiff's competitors, who was a licensee under the patent, requested that the PTO reexamine the patent on the ground that the claims were unpatentable. The competitor contended that prior art patents and publication made the '864 patent invalid. At the reexamination hearing held by defendant, the PTO Examiner rejected Claims 1-4, 11, 12, 16 and 18 of the patent on the ground that section 102 (invention must be novel) and section 103 (invention must not be obvious) of Title 35 of the U.S. Code were not satisfied. Joy Technologies appealed the Examiner's decision to the Board of Patent Appeals and Interferences. On October 31, 1988, the Board reversed the Examiner's rejection of Claims 1, 2, 11 and 12 under 35 U.S.C. § 102, but affirmd the Examiner's rejection of all the claims under section 103. Plaintiff appeals from that decision, seeking a judgment vacating the Board's decision and sustaining the patentability of the claims.

Plaintiff's complaint alleges that the decision to reexamine the patent was improper in light of earlier litigation between Joy and the third-party requester. The competitor who requested the reexamination was sued by Joy in 1980 in an action to enforce Claim 18 of the patent. After the competitor's motion to dismiss was denied, the parties entered into the licensing agreement which settled the case. Plaintiff argues

that the motion to dismiss was denied because the competitor failed to prove that Joy Technologies was not entitled to the claims of the patent. Thus, in plaintiff's view, the PTO should not have reconsidered the '864 patent since the district court had previously rejected the third party's challenge.

Plaintiff's complaint also alleges that the reexamination procedure violated its constitutional rights and was arbitrary and capricious. Although the complaint does not specify the constitutional provisions violated, Joy apparently believes that both the decision to conduct a reexamination and reexamination procedure violated due process. In addition, Joy contends that the reexamination process violates the Takings Clause, since "specifications" made public upon issuance of a patent are no longer protected if the patent fails to survive reexamination.

Discussion

Defendant advances three arguments in its motion for partial summary judgment: (a) that plaintiff is not entitled to a jury trial; (b) that the decision to conduct a reexamination (not the patentability decision which is the product of the reexamination) is committed to agency discretion and not reviewable; and (c) that the reexamination process is constitutional. Joy does not address defendant's arguments regarding the right to a jury trial and agency discretion except to assert that its analysis of the constitutionality of the statute is "intertwined" with those issues.

A. *The right to a jury trial*

Judicial review of reexamination proceedings is governed by 35 U.S.C. § 306, which provides:

> The patent owner involved in a reexamination proceeding . . . may seek court review under the provisions of sections 141-145 of [Title 35] with respect to any decision adverse to the patentability of any . . . claim of the patent.

This Court has held on numerous occasions that there is no right to a jury trial under 35 U.S.C. § 145. *See Newman v. Quigg*, 5 U.S.P.Q.2d 1880 (D.D.C. 1988); *Russell v. Quigg*, 2 U.S.P.Q.2d 1807 (D.D.C. 1988). As Judge Greene wrote, "Congress has not affirmatively granted the right to jury trial in this type of action (35 U.S.C. § 145) against the United States, as would be required under *Lehman v. Nakshian*, 453 U.S. 156, 168 (1981), and [] sovereign immunity thus precludes a jury trial." *Russell v. Quigg*, 2 U.S.P.Q.2d at 1808. Plaintiff offers no basis for departing from these precedents. Thus, defendant's motion to strike the jury demand is granted and paragraph 18 of the complaint is stricken.

B. *The decision to conduct reexamination is committed to agency discretion and unreviewable*

The reexamination statute provides that "any person at any time may file a request for reexamination by the Office of any claim of a patent on the basis of any prior art." 35 U.S.C. § 302. The Commissioner is required to promptly send the owner of the patent a copy of the request. *Id.* The Commissioner then determines "whether a substantial new question of pat-

entability . . . is raised by the request." *Id.* § 303. The patent owner will "promptly" be given a record of the Commissioner's decision. If the Commissioner finds that a substantial question is raised, he will order a "reexamination of the patent for resolution of the question." *Id.*

Plaintiff's complaint alleges, *inter alia*, that the Commissioner's decision to order reexamination in this case was improper. The Commissioner argues that his determination that a substantial new question of patentability was raised is a matter committed to discretion by law and not reviewable. *See* 5 U.S.C. § 701(a)(2). This Court has previously held that the Commission's decision is not subject to review for that reason. *Patlex Corp. v. Quigg*, 6 U.S.P.Q.2d 1296, 1298 (D.D.C. 1988) (Revercomb, J.).

In fact, this issue has already been raised, unsuccessfully, in another forum by Joy Technologies. In *Joy Manufacturing v. National Mine Service Co.*, 810 F.2d 1127, 1130 [1 USPQ2d 1627, 1629] (Fed. Cir. 1987), the Federal Circuit affirmed the trial court's denial of Joy's motion to enjoin its competitor from proceeding with the request for reexamination which gave rise to this action. Joy contended that the request violated the earlier settlement agreement in which the competitor agreed not to bring suit in any United States court challenging the validity of the patent. The Federal Circuit agreed that seeking reexamination was not the same as bringing suit. More importantly, for these purposes, the Federal Circuit noted that it could not grant the relief sought by Joy —stopping the reexamination proceeding. "The decision by the Commissioner to institute reexamination

is not subject to judicial review." *Id.* at 1130 [1 USPQ2d at 1629].

In conclusion, *Patlex v. Quigg* and *Joy Manufacturing v. National Mines* hold that the Commissioner's decision to conduct reexamination is unreviewable. Plaintiff does not address either of these cases. Thus, defendant's motion for partial summary judgment on this ground is granted. Paragraph 9 is stricken from the complaint.

C. *Constitutionality of the reexamination procedure*

Plaintiff alleges that "the reexamination procedure was in violation of its constitutional rights." Complaint ¶ 10. Defendant seeks to strike this paragraph of the complaint on the ground that the reexamination statute and regulations were held constitutional in *Patlex Corp. v. Mossinghoff*, 585 F.Supp. 713 [220 USPQ 342] (E.D. Pa. 1983), *aff'd in part and vacated in part*, 758 F.2d 594 [225 USPQ 243], *aff'd in part and vacated in part*, 771 F.2d 480 [226 USPQ 985] (Fed. Cir. 1985) (on rehearing by the panel).

In *Patlex v. Mossinghoff*, the appellees sought to enjoin the Commissioner from reexamining their patents. They contended that the reexamination statute, 35 U.S.C. §§ 301-307, and the PTO regulations and procedures implementing the statute, were unconstitutional. 585 F.Supp. at 716 [220 USPQ at 344]. The district court and the Federal Circuit held that neither the statute nor the implementing regulations were unconstitutional. At issue in *Patlex v. Mossinghoff* was whether the reexamination statute, passed in 1980, deprived patent owners of any constitutionally protected property interest. The Federal Circuit first

considered whether the retroactive effect of the reexamination statute violated the Fifth Amendment's guarantee of due process. Prior to the reexamination statute, a patent could be declared invalid, but there was no procedure for reexamination. Plaintiffs in *Patlex v. Mossinghoff* argued that they were effectively deprived of their patent right—the right to exclude others—during the course of the reexamination proceeding (due to uncertainty about the outcome of the proceeding). The court reasoned that due process was not offended because Congress enacted the statute to achieve an important governmental purpose and any hardship worked on patent holders as a result of the reexamination procedure is temporary. 758 F.2d at 600-01 [225 USPQ at 248].

Joy Technologies does not argue that the court erred in *Patlex v. Mossinghoff*. Rather, it contends that that case did not consider the argument raised by Joy in this proceeding: that common law property, not just the patent claims, is affected by the reexamination.[1] The common law property that Joy suggests is affected is the specifications explaining how to make and use the invention. The specifications are required to be made public by the Patent Act of 1952 ("the '52 Act"), 35 U.S.C. § 1 *et seq.* Joy contends that it has a common law property interest in these specifications and that its interest was taken without compensation when the patent claims were cancelled as a result of reexamination.

---

[1] Joy does not specifically make this argument in its Complaint and does not clearly make it in its brief on this motion. Apparently Joy contends that it is deprived of this proprietary information in violation of both due process and the Takings clause.

The '52 Act requires that when a patent is issued, specifications be made public that "contain a written description of the invention, and of the manner and process of making and using it, in [] full, clear and concise and exact terms." 35 U.S.C. § 112. This material is in addition to that which is disclosed in the patent claims. But the patent claims usually exclude others from using this proprietary information so long as the patent claims are valid. Without the protection of the patent claims, this proprietary information is not protected. Thus, when the patent claims were cancelled. Joy's ability to exclude others from using the specifications was also cancelled.

The government contends that there are no common law property rights protected by the '52 Act and, alternatively, that *Patlex v. Mossinghoff* adequately addresses the reexamination statute's treatment of any such property rights. Joy relies on *Crown Die & Tool Co. v. Nye Tool & Machine Works*, 261 U.S. 24 (1922), for the proposition that the specifications are common law property protected by the '52 Act. Plaintiff's Memorandum at 5-7. But plaintiff misconstrues *Crown Die & Tool v. Nye Tool*, essentially creating a protected property interest out of thin air. The facts and holding of that case are as follows: Crown Die & Tool contested the validity of an agreement between the owner of a patent, Reed Manufacturing, and a competitor of Crown's, Nye Tool. In the agreement, Reed Manufacturing assigned to Nye Tool its "rights of exclusion" under the patent "as may be exercised against Crown Die" for infringement of the patent. Nye Tool subsequently brought suit against Crown Die for infringement of Reed Manufacturing's patent. Crown Die moved to dismiss on the ground that the attempted assignment

conferred no right to sue for damages for infringement. The Supreme Court agreed. Justice Taft reasoned that all that a patentee acquires from the government is the right to exclude others from using his invention. The right to make, use and vend one's own invention was a common law right. Therefore, the right to exclude could be exercised only as authorized by the statute. 261 U.S. 40. The Court concluded that the right to exclude could not effectively be assigned unless the common law right to make and vend was assigned as well. Thus, the plaintiff must be the owner of the patent at the time of infringement. The assignee could sue only if the patent owner joined in the suit.

Joy properly notes that *Crown Tool* reiterated the well-established axiom that there is a common law property right "to make, use and vend" one's own invention. 261 U.S. at 34-36. From this principle Joy Technology somehow draws the conclusion "that underlying a patent and distinct from the allowed claims of invention is a common-law property right, including that which is required" to be disclosed in the specifications required by section 112 of the '52 Act. Plaintiff's Memorandum at 6. Thus, Joy asserts, "cancellation of claims clearly amounts to a taking of other common-law property outside the claims and without compensation." Plaintiff's Memorandum at 7.

Defendant argues that there are no common law property rights protected by the '52 Act. The Court agrees. Joy does have common law property rights in the specifications. But the common law right is the right to make, use, and vend the invention—in this case circuitry—depicted by the specifications. Joy's common law right to make, use and vend the

circuitry has not been changed one whit by the Commissioner's decision: Joy could make, use, and vend the circuitry before the patent was issued, while the patent claims were valid, and after the patent claims were cancelled. But rescinding protection for the patent claims did not remove any pre-existing protection from the specifications because they were never protected: "[A]n inventor has no right of property in his invention upon which he can maintain a suit, unless he obtains a patent for it, according to the acts of Congress; and that his rights are to be regulated and measured by these laws, and cannot go beyond them." *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 526 [173 USPQ 769, 772-73 n.8] (1972) (quoting *Brown v. Duchesne*, 19 How. 183, 195 (1857)).

Put simply, Joy takes the principle reiterated in *Crown Die & Tool*—that there is a common law right to *use* one's own invention—and inexplicably recharacterizes it as a common law right to *exclude* others from using or reproducing one's invention. But the right to exclude comes only from the patent statutes. Joy has no common law right to exclude others from making, using, and vending its invention. *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 481 [181 USPQ 673, 678] (1974). Joy's common law right to use its own invention is not derived from the patent law and is not affected by the Commissioner's action. Joy's statutory right to exclude others stems solely from the patent laws and encompasses only the material contained in the patent claims. Thus, the Commissioner's reexamination did not deprive Joy of any property rights other than those statutorily created by the patent claim. Because the Commissioner's action does not deprive Joy of any constitutionally rec-

ognized property interest, defendant's motion to dismiss paragraph 9 of the Complaint is granted.

Even if the Court accepted Joy's assertion that the "specifications" are property protected by the patent laws, the taking of that property by the reexamination statute is plainly constitutional under the holding in *Patlex Corp. v. Mossinghoff*, 585 F.Supp. 713 [220 USPQ 342] (E.D.Pa. 1983), *aff'd in part and vacated in part*, 758 F.2d 594 [225 USPQ 243], *aff'd in part and vacated in part*, 771 F.2d 480 [226 USPQ 985] (Fed. Cir. 1985) (on rehearing). The *Patlex* decision was grounded on the Court's conclusion that the statute was a reasonable effort by Congress "to remedy perceived shortcomings in the system by which patents are issued." *Patlex*, 758 F.2d at 603 [225 USPQ at 250]. The interference with the inventment-backed expectations of patent owners was not significant; although their patent could be cancelled, even before the reexamination statute was passed it was possible that the patent might be lost in an infringement suit or in an interference with a pending application. *See* 35 U.S.C. § 135. In sum, the Federal Circuit concluded that the need to reform the patent laws outweighed any impact on the patent owners.

Although *Patlex v. Mossinghoff* addressed only the patented claims, the above analysis applies equally to any property rights represented by the specifications. Joy Technologies makes the argument that it might not have revealed the specification information to obtain the patent had it known of the possibility of reexamination. But even before the reexamination statute it was possible that Joy's patented claims, and hence any protection for the specifications, might be cancelled. In any event, there is no reason why the

basic premise of *Patlex v. Mossinghoff*—that the re-examination statute was reasonable measure and thus constitutional—does not apply to Joy's argument that it was deprived of the specifications. In conclusion, the Commissioner's motion to dismiss Joy's constitutional claim can be granted for either of two independent reasons. First, as a matter of law, Joy has no common law property interest affected by the Commissioner's decision. Second, any property interest Joy was deprived of was taken in a constitutionally permissible manner, as held in *Patlex v. Mossinghoff*.

APPENDIX B

UNITED STATES DISTRICT COURT
DISTRICT OF COLUMBIA

Civ. A. No. 88-3656-OG

JOY TECHNOLOGIES, INC., PLAINTIFF

v.

DONALD J. QUIGG, DEFENDANT

March 12, 1990

MEMORANDUM

BENNETT, Senior Circuit Judge.*

This patent case is before the court on the summary judgment motion of the defendant Commissioner of Patents and Trademarks. The motion is denied because genuine issues of material fact exist concerning the objective indicia of nonobviousness. It appears from the parties' submissions that the plaintiff has failed to raise a genuine issue as to many of the other facts essential to deciding the case as a matter of law. Therefore, pursuant to Fed.R. Civ.P. 56(d), those facts shall be deemed established.

---

* Marion T. Bennett, Senior Circuit Judge, United States Court of Appeals for the Federal Circuit, sitting by designation. 28 U.S.C. § 294(d) (1982).

They are identified in the Memorandum and are set forth in the order issued today.

I. *Background*

Joy Technologies, Inc. (Joy), is the assignee of U.S. Patent 4,042,864 (the '864 patent), which issued August 16, 1977, and named Melvin N. Norris as inventor. The patent includes 18 claims directed to an AC-DC traction drive control system for a mining machine, a mining machine embodying that system, and methods of operating such a machine.

On August 23, 1985, a business competitor of Joy's, National Mine Service Company (NMS), requested reexamination of the '864 patent by the Patent and Trademark Office (PTO). The PTO determined that substantial new questions of patentability existed and that the patent should be reexamined. The patent examiner rejected claims 1 to 4, 11, 12, 16, and 18 under 35 U.S.C. § 102 (1982) (lack of novelty) and section 103 (obviousness). Joy appealed to the Board of Patent Appeals and Interferences (Board). On October 31, 1988, the Board rendered its decision, reversing the section 102 rejection but affirming the second 103 rejection.

Joy filed this suit against the Commissioner of Patents and Trademarks (Commissioner) under 35 U.S.C. § 145 (1982), which creates a remedy by civil action for patentees and applicants dissatisfied with the decision of the Board. This court (Gasch, J., presiding) granted the Commissioner's partial summary judgment motion to dismiss Joy's claims relating to the PTO's exercise of discretion in initially granting the reexamination and the alleged unconstitutionality of reexamination proceedings, as well

as to strike Joy's request for a jury trial. 12 USPQ2d 1112, 1989 WL 150027 (D.D.C. 1989). Thereafter, the Commissioner filed the present motion for summary judgment that the invention of the '864 patent would have been obvious under section 103 and that the decision of the Board was correct.

II. *The Standards for Summary Judgment*

Rule 56(c) of the Federal Rules of Civil Procedure sets forth the standard for granting summary judgment. "The judgment sought shall be rendered forthwith if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law." As the Supreme Court has stated, "[s]ummary judgment procedure is properly regarded not as a disfavored procedural shortcut, but rather as an integral part of the Federal Rules as a whole, which are designed 'to secure the just, speedy and inexpensive determination of every action.'" *Celotex Corp. v. Catrett*, 477 U.S. 317, 327, 106 S.Ct. 2548, 2555, 91 L.Ed.2d 265 (1986) (quoting Fed.R.Civ. 1).

Rule 56 further provides that "[w]hen a motion for summary judgment is made and supported as provided in this rule, an adverse party may not rest upon the mere allegations or denials of the adverse party's pleading, but the adverse party's response, by affidavits or as otherwise provided in this rule, must set forth specific facts showing that there is a genuine issue for trial. If the adverse party does not so respond, summary judgment, if appropriate, shall be entered against the adverse party." Fed.R.Civ.P.

56(e). The Supreme Court stated in *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 106 S.Ct. 2505, 91 L.Ed.2d 202 (1986), "there is no issue for trial unless there is sufficient evidence favoring the nonmoving party for a jury to return a verdict for that party. If the evidence is merely colorable, or is not significantly probative, summary judgment may be granted." *Id.* at 249-50 (citations omitted). The nonmoving party must do more than merely raise some doubt as to the existence of a fact; the nonmoving party must present evidence sufficient to require submission of the issue to the trier of fact. *Avia Group Int'l, Inc. v. L.A. Gear California, Inc.*, 853 F.2d 1557, 1560, 7 USPQ2d 1548, 1550 (Fed.Cir. 1988).

As the Federal Circuit has held, "[w]ith respect to whether there is a genuine issue, the court may not simply accept a party's statement that a fact is challenged. The party opposing the motion must point to an evidentiary conflict created on the record at least by a counter statement of a fact or facts set forth in detail in an affidavit by a knowledgeable affiant. Mere denials or conclusory statements are insufficient." *Barmag Barmer Maschinenfabrik AG v. Murata Machinery, Ltd.*, 731 F.2d 831, 835-36, 221 USPQ 561, 564 (Fed.Cir. 1984). *See also Russell v. Commissioner of Patents & Trademarks*, 695 F.Supp. 572, 573, 8 USPQ2d 1452, 1453 (D.D.C. 1988).

While the nonmovant must come forward with some evidence showing that there is a genuine issue of material fact, the established facts, as well as any inferences reasonably drawn from those facts, must be viewed in a light most favorable to the nonmovant. *Barmag Barmer*, 731 F.2d at 836, 221 USPQ at 564.

Finally, Rule 56(d) provides that if summary judgment is not rendered on the whole case and a trial is necessary, the court may make an order specifying the facts that appear without substantial controversy. Upon trial of the action, the facts so specified shall be deemed established. Fed.R.Civ.P. 56(d).

In this case, Joy has failed to show that there are genuine issues with respect to most of the facts of this case. The Commissioner's motion for summary judgment sets forth in great detail the material facts relevant to the obviousness question. The motion is well supported by the reexamination record. By contrast, Joy's opposition relies primarily on unsupported allegations of its attorneys and on conclusory denials and statements of its affiants. Thus, as to most of the facts of this case, Joy has failed to show there are triable issues. Nevertheless, it appears from the record and from the evidence Joy has submitted that there are genuine issues relating to the "secondary considerations" of nonobviousness. Therefore, summary judgment on the entire case is inappropriate.

Joy argued in its motion papers that summary judgment would deny its right under 35 U.S.C. § 145 to supplement the reexamination record with additional evidence. Joy also argues that this case involves a highly technical subject where explanatory testimony is necessary. The Federal Circuit has made it clear that summary judgment is appropriate in patent cases, as in any other case. *Barmag Barmer*, 731 F.2d at 835, 221 USPQ at 564. Moreover, Joy is not "deprived" of a trial where the Commissioner has submitted evidence supporting its position on the relevant issues, and Joy has failed to identify evidence sufficient to create a triable issue of material fact. *See Avia Group*, 853 F.2d at 1560-61, 7 USPQ2d

at 1551. Joy has every right in this proceeding to supplement the reexamination record with additional evidence, whether at trial or in opposing a motion for summary judgment. Where it fails to provide evidence, including such supplemental evidence, so as to create a triable issue, summary judgment is appropriate.

III. *The Patent at Issue*

The '864 patent relates to an AC-DC traction drive control system for a coal mine shuttle car. Shuttle cars are used in coal mines to transfer the material being mined from the work area to an unloading area, where conveyor belts or cars transfer the material out of the mine. Because it is desirable to excavate only the coal seam, rather than the rock surrounding the coal seam, the shuttle car must often operate in a limited space. In addition, the coal mine is often an explosive environment, and legal restrictions limit the type of electrical circuitry that can be used on the shuttle car.

As described in the Joy patent, prior art shuttle cars are of two types, namely, the AC type and the DC type. AC type shuttle cars are powered by alternating current (AC) supplied by a trailing cable. They utilize AC motors for driving the wheels of the car. DC type shuttle cars utilize direct current (DC) supplied by a trailing cable to power DC drive motors. Each of the types of prior art shuttle cars has a number of advantages and disadvantages.

The shuttle car described in the Joy patent has a machine body and four steerable wheels. The wheels are separately driven by DC traction motors. Electrical power is supplied to the car by means of a trail-

ing cable. The power supply is three phase alternating current (AC). The shuttle car includes conversion circuitry for converting the AC to DC in order to power the traction motors. The patent drawings and specification describe in detail the conversion circuitry; however, the circuitry is broadly claimed in the independent claims. Briefly, the incoming AC is applied to the primary windings of a transformer. The AC output from the secondary windings of the transformer is rectified to DC and applied to the traction motors.

The shuttle car described in the patent includes a control means which permits the transformer to be selectively activated in different winding configurations to provide different levels of output to the traction motors. The shuttle car may include auxiliary motors, such as a pump motor for the hydraulic system and a conveyor motor for operating the conveyor on the shuttle. The auxiliary motors may be powered by a portion of the AC from the trailing cable.

The three independent claims, as amended in the reexamination proceeding, are as follows:

> 1. A steerable mobile machine energized through a trailing cable for use in forming a passageway by mining and hauling coal from an underground seam, such as a mined material transporting shuttle car, comprising a machine body, a plurality of surface engaging means carried by said body and relatively movable with respect thereto and continuously engaging the ground, at least one DC traction motor carried by said body and cooperable with at least some of said surface engaging means to cause movement thereof, steering means carried by said body for

selectively controlling said surface engaging means carried by said body for converting a three phase AC input to an electrical DC output, control means carried by said body for controllably applying said DC output to said DC traction motor, and a flexible trailing cable connected to said conversion means for selectively supplying said three phase AC input to said conversion means.

16. In a control drive system for a steerable wheeled vehicle energized through a trailing cable, for use in forming a passageway by mining and hauling coal from an underground seam, such as a mined material transporting shuttle car operative between a work area and a station point which is supplied with three phase AC via said cable connected between a source of three phase AC at said station point and said vehicle, said vehicle being driven by at least one DC traction motor, the combination of: conversion means carried by said vehicle for converting said AC from said cable to DC, said conversion means including transformer means having primary and secondary windings responsive to the AC from said cable for providing a three phase AC output; rectifier means responsive to the AC output of said transformer means for providing said DC; and control means for controllably applying said DC from said conversion means to said traction motor for controllably driving said vehicle; said control means operative to control the output of said transformer means to said conversion means by selection of one of a plurality of different configurations of said secondary windings

so that the degree of energization of said traction motor is selectively controlled for acceleration of said vehicle.

18. A method of operating a mobile machine of the type which is driven by traction motors electrically energized through a trailing cable in an underground passageway of a mine in which mining operations are conducted, comprising the steps of: selectively reeling and unreeling said trailing cable with respect to said machine as required during movement of said machine through selectable paths spaced from said source and with some paths of said selectable paths constituting random paths; converting at the machine end of said trailing cable at least a portion of a three phase AC input to a DC output; and selectively energizing at least the traction motors of said mobile machine by said DC output.

Several of the claim limitations are written in the "means plus function" format. Under 35 U.S.C. § 112, ¶ 6, those "means" for performing the function are construed to cover the corresponding structure described in the specification and equivalents thereof.

The '864 patent includes several dependent claims. Joy has not argued the patentability of those claims separate from the independent claims, either in the reexamination or in this proceeding. Thus, the dependent claims stand or fall with the independent claims. *In re Nielson*, 816 F.2d 1567, 1572 2 USPQ2d 1525, 1528 (Fed.Cir. 1987).

IV. *The Board's Decision*

The Board affirmed the examiner's rejection of claims 1-4, 11, 12, 16, and 18 as obvious under 35

U.S.C. § 103. The claims were rejected over the patentee's discussion of the prior art shuttle cars in his patent and the references relating to the P & H mining shovel. The Board stated that the artisan would have been strongly motivated to combine the prior art AC and DC types of shuttle cars into a hybrid system based on the patentee's thorough discussion of the advantages and disadvantages of each system. The P & H shovel references show the conversion of three phase AC to DC through use of transformers and rectifiers for application to DC motors. According to the Board, the P & H shovel would have shown to the artisan that such a hybrid system was viable in an underground mining environment because the P & H shovel was in reality in an above-ground mining environment.

The claims were also rejected as unpatentable under section 103 over the patentee's admissions, French Brevet d'Invention No. 1,152,782 (the French patent), U.S. Patent No. 2,599,061 to Lee (the Lee patent), and U.S. Patent No. 2,434,585 to Renshaw (the Renshaw patent). According to the Board, the French patent shows an AC-DC conversion system on board an electric locomotive. The patent shows various taps available on the secondary windings of a transformer utilized for controlling the speed of DC traction motors. The Board observed that the patentee had admitted in the prosecution that mine locomotives are old in the art and work side by side with the shuttle cars underground. The Board held that the teachings of the French patent, together with the advantages and disadvantages of the AC and DC shuttle cars, would have led the artisan to conclude that it would have been obvious to utilize the teachings to combine the AC and DC systems into a hybrid

control system. According to the Board, the Lee and Renshaw patents provide cumulative teachings as to the obviousness of the claims rejected. Those patents relate, respectively, to a shuttle car with a cable reel and an electric mine locomotive which may utilize a cable reel. Claim 16 was rejected over the additional reference to the Muskingum Electric Railroad article, which, according to the Board, shows a conversion means having a transformer with primary and secondary windings and an associated rectifier means with the capability to select among a plurality of configurations of the secondary windings. In the motion for summary judgment, the Commissioner has also cited other references.

V. *The Obviousness Issues*

The Commissioner's motion seeks summary judgment that the claims at issue are obvious under 35 U.S.C. § 103. That section provides, in relevant part, that a patent on an invention may not be obtained

> if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

As set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 86 S.Ct. 684, 693-94, 15 L.Ed.2d 545 (1966), four factual inquiries must be made in the obviousness determination: (1) the scope and content of the prior art; (2) the differences between the prior art and the claimed invention; (3) the level of ordinary skill in the art; and (4) the "secondary con-

siderations" which may serve as objective indicia of nonobviousness, such as commercial success, unexpected results, and failure of others who have tried to solve the problem. The ultimate obvious-nonobvious question is one of law, but the underlying inquiries that must be made are questions of fact. *See Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1566-68, 1 USPQ2d 1593, 1595-97 (Fed.Cir.), *cert. denied*, 481 U.S. 1052, 107 S.Ct. 2187, 95 L.Ed.2d 843 (1987).

A. Scope and Content of the Prior Art

The first factual inquiry under the *Graham* test is the determination of the scope and content of the prior art. The "scope" of the prior art determines what references fall within the relevant prior art that can be applied to reject a claim. The "content" of the prior art is what those references teach a person of ordinary skill in the art.

1. *Scope of the Prior Art*

A reference is analogous, and within the scope of prior art that may be considered, if it is either within the inventor's field of endeavor or reasonably pertinent to the particular problem with which the inventor was involved. *In re Deminski*, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed.Cir. 1986); *In re Wood*, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979).

The Commissioner relies on three areas of art to invalidate the Joy patent: mine shuttle car technology, the aboveground mine shovel technology (the P & H shovel references), and lococotive technology the French and Renshaw patents and the Muskingum

railroad article). The shuttle car references are unquestionably within the inventor's field of endeavor, and Joy does not challenge their applicability.

In support of his position that the P & H shovel is analogous art under the *Wood* analysis, the Commissioner relies on a statement that Joy made during the prosecution of the patent application and the inventor's statement of the field of his invention. Joy's prosecution attorneys stated, "Applicant hereby advises the Examiner that pertinent art may possibly reside in the field of power excavators." Ex. 4 at 0964, amendment filed Dec. 28, 1976. The Commissioner cited the *Standard Handbook for Electrical Engineers* to show that shovels such as the P & H shovel are power excavators. In addition, the inventor, in his patent, described the field of his invention (Ex. 4 at 0054, '864 patent at col. 1, lines 12-16):

> The present invention relates to a control drive system for a vehicle operating between two points and, more particularly, to a control drive system wherein AC is converted to DC aboard the vehicle for energizing the drive means of the vehicle.

The Commissioner points out that both the P & H shovel and the locomotives which convert AC to DC are within that broadly defined field of the invention, or at least reasonably pertinent to the problem of electrical control drive systems. According to the Commissioner, aboveground machines may require modification to operate in an underground environment, but a person of ordinary skill in the art may refer to the aboveground machines in looking for a solution to the electric drive problem. *See In re Deminskli*, 796 F.2d at 442, 230 USPQ at 315

(pumps are analogous to compressors because both are within the field of endeavor of horizontally reciprocating, double-acting piston devices for moving fluids); *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1535, 218 USPQ 871, 876 (Fed.Cir. 1983) (rubber hose art was analogous to PTFE tubing because reasonably pertinent to the search for a solution to the problem of preventing electrostatic buildup in the tubing; the inventor referred to the art when he began his search for a solution).

With respect to the locomotive technology, the Commissioner cited a statement made by Joy during the reexamination:

> One kind of main haulage use in underground coal mining for years is by the electric locomotive. Electric locomotives and shuttle cars have existed side by side in coal mines since the inception of shuttle cars in the 1940's. In all that period of time no one, until the instant invention, perceived that an AC-DC shuttle car could be provided.

Ex 4 at 0866, Brief for Appellant dated July 8, 1987. The Commissioner pointed out that the statement that locomotives and shuttle cars exist side by side is essentially an admission that they are analogous. Both electric drives operate in the same environment and both the locomotives and the shuttle cars are haulage vehicles.

Joy's response includes the conclusory statement that "oral testimony . . . will establish the field of endeavor was limited to underground shuttle cars." Joy asserts that technology relating to aboveground shovels and locomotives is entirely too large and unsafe for use on a shuttle car or other underground

mining machine. In response to the Commissioner's citation of the inventor's statement of the field of his invention, Joy asserts that "[t]he invention of the patent is defined in the claims." Joy asserts that locomotive technology is not reasonably pertinent unless the locomotives travel in random paths in an explosive underground environment and that the P & H shovel is not reasonably pertinent because it does not teach or suggest a traction drive for a shuttle car.

Joy has failed to raise any issue of material fact concerning the scope of the prior art. The Commissioner has submitted evidence showing that the inventor and his attorneys considered excavating equipment and locomotives to be pertinent to the '864 invention. Indeed, the inventor broadly defined his invention as relating to a control drive system for a vehicle operating between two points. The Commissioner has shown that one of ordinary skill in the art would refer to excavating equipment and locomotive technology in looking for solutions to the problem of electric motor drives on underground mine shuttle cars. Joy's statements, while pointing to differences between shovel and locomotive technology and the shuttle car, do not raise any issue of fact concerning whether those technologies are reasonably pertinent to the problem faced by the inventor. *See Union Carbide Corp. v. American Can Co.*, 724 F.2d 1567, 1572, 220 USPQ 584, 588-89 (Fed.Cir. 1984) (affirming the grant of summary judgment where the patentee's affidavit contained unsupported, conclusory opinions which ignored the evidence of what the applicant had considered pertinent prior art). *See also Gallagher v. Quigg*, 8 USPQ2d 1437, 1439, 1989 WL 4478 (D.D.C. 1988).

2. *Content of the Prior Art*

The Commissioner has set forth at length the teachings of the various references on which he relies in arguing that the invention of the '864 patent is obvious. Commissioner's Memorandum at 14-23 in support of his motion. The Commissioner's evidence is supported by extensive citations to the reexamination record.

In the '864 patent, the inventor described in detail the advantages and disadvantages of the prior art AC and DC shuttle cars. According to the inventor, his AC-DC shuttle car takes advantage of all the desirable features of the DC system while introducing none of the disadvantages of either the DC or AC systems. While Joy challenges the Commissioner's position that the advantages and disadvantages of the prior art systems were known in the art, Joy makes no attempt to show how evidence would refute that position.

Moreover, the Commissioner has submitted several prior art patents that recognize the advantages and disadvantages of AC and DC propulsion systems. U.S. Patent No. 3,257,597 to Weiser recognized that AC traction motors were considerably more bulky and less efficient than DC motors. The reference recognizes that various attempts have been made to convert AC input to DC output in the electric locomotive field "to combine the advantages of an A.-C. type power distribution system with a D.-C. type propulsion system." The Alexanderson patent, U.S. Patent No. 2,549,405 recognizes that DC drive motors are advantageous because of their easily obtainable variable speeds, but for long-distance trolley locomotives, AC is advantageous because of the ease with

which voltages may be increased for power transmission and decreased for utilization. The article by Barnes, *Mining with a-c power*, Mechanization, October 1960, sets forth many reasons for the trend toward AC mining from DC mining, including increased efficiency of power transmission.

The P & H shovel references show most of the elements of the independent claims of the '864 patent, albeit in a surface mine loader rather than in an underground shuttle car. The P & H shovel has a DC traction motor and a three phase AC power supply rectified in controllable amounts for application to the DC motor. The power conversion system of the P & H shovel includes a transformer with a three phase AC output. The AC is rectified to DC using "thyristors" or silicon controlled·rectifiers. A portion of the AC power supply is diverted for application to AC auxiliary equipment.

The French patent similarly shows most of the elements recited in the independent claims, although on a fixed wheel rail vehicle rather than a steerable shuttle car. The locomotive of the French patent has an AC-DC conversion system, in which a single phase AC power supply is converted in controllable amounts for application to a DC motor. The conversion system includes a transformer and rectifiers. The output of the conversion system is controlled by selecting different configurations of transformer windings.

The Renshaw patent shows an electric locomotive energized by either a trolley conductor or a cable reel. The Sessions patent (U.S. Patent No. 1,123,602) shows a coal mine locomotive with a cable reel. The Lee patent shows a prior art shuttle car, which is powered through use of a cable reel. The Muskingum railroad article shows an AC-DC conversion system

for use on an aboveground electric railroad. The article shows that the output from a conversion system transformer can be controlled in a step-by-step fashion using switches which select different secondary windings of the transformer. The Commissioner has cited a number of other references that contain similar teachings.

The evidence the Commissioner has submitted consists of the reexamination record and references. The references are addressed to the problems of AC-DC propulsion systems and shuttle car drives. The teachings of the references are evident from the references themselves. The references show the state of the art at the time the Norris invention was made. This case is thus distinguishable from *Cooper v. Ford Motor Co.*, 748 F.2d 677, 223 USPQ 1286 (Fed.Cir.1984), in which the patentee had pointed out a reasonable interpretation of the references showing how they did not teach his invention and how they did not address the problem he faced.

In its response, Joy has put forth several arguments challenging the Commissioner's evidence of the content of the prior art. None of the arguments raises any genuine issue of fact. Joy states that "unless the parties agree with what a reference teaches, then for the [c]ourt to resolve the dispute would require that a finding of fact be made. . . ." Supplemental Response at 2. However, Joy cannot successfully oppose a motion for summary judgment by simply denying the facts set forth by the Commissioner or by making conclusory statements. *See Barmag Barmer*, 731 F.2d at 835-36, 221 USPQ at 564.

The primary basis for Joy's opposition respecting the content of the prior art is its assertion that the P & H mining shovel and the electric locomotives are

too large or dangerous to use in the environment of the shuttle car. Joy states that they cannot be modified to operate as shuttle cars, and their electrical circuitries cannot be used on a shuttle car. The affidavit of the inventor Norris states that none of the prior art discloses electrical components that can be used on the shuttle car due to size or other restrictions. Supplemental Memorandum, Norris Affidavit at 8-10. The Kelley affidavit states that the machines disclosed in the references cited by the Commissioner are not suitable for use in the working face area where the shuttle cars operate. Supplemental Memorandum, Kelley Affidavit at 3. The Warner report states that the P & H shovel is a loader, not a haulage vehicle, and it cannot be used underground or scaled down to operate as a shuttle car. Ex. 4 at 0551-52, Warner Report. The Price affidavit, also, states that the P & H shovel cannot be adapted practically to perform as an underground mining machine. Ex. 4 at 0523-27, Price Affidavit.

The evidence Joy has submitted, while pointing to differences between the prior art and the '864 shuttle car, does not raise any issue of material fact concerning the content of the prior art. The fact that the P & H shovel and the electric locomotives cannot be used as a shuttle car does not mean those references cannot be used in the obviousness determination.

The Federal Circuit has rejected similar arguments regarding the applicability of prior art that is not physically combinable. In *In re Sneed*, 710 F.2d 1544, 1550, 218 USPQ 385, 389 (Fed.Cir.1983), the court stated "[a]ppellants argue that Nelson should not be considered because it deals with collapsible hose rather than flexible plastic pipe and teaches that rolling 600

feet of 4 inch, noncollapsible hose into a transportable bundle is virtually 'an insurmountable task.' What appellants overlook is that it is not necessary that the inventions of the references be physically combinable to render obvious the invention under review." *See also In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981) ("The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; . . . . Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art."). In this case, it is not necessary that the P & H shovel and the electric locomotives, or their electrical components, be utilizable *per se* in an underground coal mine for those references to serve as prior art for all that they teach.

In addition, the independent claims of the '864 patent do not recite the elements that allegedly make the shuttle car operable in the underground mining environment. Limitations cannot be read into the claims to overcome validity challenges. *E.I. Du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433-34, 7 USPQ2d 1129, 1131-32 (Fed. Cir.), *cert. denied*, —— U.S. ——, 109 S.Ct. 542, 102 L.Ed.2d 572 (1988). Moreover, whatever "problems" faced by Joy in designing a shuttle car operable under the size and legal restrictions of the underground coal mining environment, the patent makes it clear that the invention was directed to the problem of overcoming the disadvantages of the prior art AC and DC shuttle cars. Ex. 4 at 54-55, '864 patent at col. 1, line 33 to col. 2, line 24. *Cf. In re Wright*, 848 F.2d 1216, 6 USPQ2d 1959 (Fed.Cir.1988).

B. The Differences Between the Prior Art and the Claimed Invention

The Commissioner has pointed to several differences between the prior art discussed above and the claimed invention. The Commissioner states that the prior art DC shuttle cars did not have the transmission of AC power through the trailing cable and did not convert AC to DC on the shuttle car. The prior art AC shuttle cars did not convert the AC to DC on the shuttle car and utilized AC traction motors rather than DC motors. With respect to claim 16, the prior art shuttle cars did not show the particular means for converting AC to DC in a step-by-step fashion. Several of the prior art references show the conversion of single phase AC rather than three phase AC.

Joy, in its response, states without evidentiary support that "the differences between the claims and the prior art resides [sic] in the structure and method as defined in the claims." Supplemental Memorandum at 10. Joy also states that the differences go well beyond the differences set forth by the Commissioner due to size restrictions and operating conditions of the shuttle cars. Joy also asserts that none of the references teach or suggest a traction drive for a shuttle car. This last assertion is incredible in view of the number of shuttle car references cited by the Commissioner.

There is no genuine issue concerning the differences between the claimed invention and the prior art. As discussed above with respect to the scope and content of the prior art, the P & H shovel and the electric locomotives are allegedly unsuitable for use as a shuttle car operating underground in an explosive environment. However, those differences are not in-

consistent with those set forth by the Commissioner. All such differences are to be considered in the ultimate determination of whether the claimed invention would have been obvious in view of the prior art.

C. The Level of Ordinary Skill in the Art

The Commissioner asserts that in this case, a specific finding of the level of ordinary skill in the art is not required. Rather, the cited references reflect the appropriate level. *See Chore-Time Equip., Inc. v. Cumberland Corp.*, 713 F.2d 774, 779 n. 2, 218 USPQ 673, 676 n. 2 (Fed.Cir.1983). Joy states that the level of ordinary skill in the art is evidenced by persons having knowledge of the operating conditions for shuttle cars.

There is no genuine issue concerning the level of skill in the art. While the rule the Commissioner cites is applicable in cases where the subject matter is easily understandable (*see Chore-Time* (poultry feeders)), the subject matter of the patent at issue is technically complex. However, the claim elements are recited in general terms (e.g., conversion means), and the particular electrical circuitry is not claimed. Therefore, the references cited can be used to reflect the appropriate level of skill in the art, with the added provision, as Joy asserts, that one skilled in the art would have knowledge of the operating conditions for shuttle cars.

D. Objective Indicia of Nonobviousness

As the Federal Circuit has stated, "evidence rising out of the so-called 'secondary considerations' must always when present be considered en route to a determination of obviousness. Indeed, evidence of

secondary considerations may often be the most probative and cogent evidence in the record. It may often establish that an invention appearing to have been obvious in light of the prior art was not." *Stratoflex*, 713 F.2d at 1538, 218 USPQ at 879 (citations omitted). Summary judgment of obviousness is inappropriate where issues of fact exist concerning the secondary considerations. *Finish Eng'g Co. v. Zerpa Indus., Inc.*, 806 F.2d 1041, 1 USPQ2d 1114 (Fed.Cir.1986). Even though the references cited are such that the invention may at first appear to be obvious, the objective indicia of non-obviousness may be sufficient to compel a contrary result. *See Alco Standard Corp. v. Tennessee Valley Authority*, 808 F.2d 1490, 1499-1501, 1 USPQ2d 1337, 1344-45 (Fed. Cir.1986), *cert. dismissed*, 483 U.S. 1052, 108 S.Ct. 26, 97 L.Ed.2d 815 (1987); *Burlington Indus., Inc. v. Quigg*, 229 USPQ 916 (D.D.C.1986), *aff'd*, 822 F.2d 1581, 3 USPQ 1436 (Fed.Cir.1987).

In this case, there is a variety of evidence pertaining to the "secondary considerations" of nonobviousness. In the reexamination proceeding Joy submitted an announcement by National Mine Service (NMS), a competitor, showing that that company had standardized its line of shuttle cars to an AC-DC drive. Joy also submitted a memorandum prepared by an NMS engineer soon after the introduction of the Joy AC-DC shuttle car disputing the alleged superiority of the Joy car. The Warner affidavit (Ex. 4 at 0542-43) asserts that when the patented shuttle car was introduced, many people in the mining industry ridiculed Joy for combining what they considered the disadvantages of the AC and DC shuttle cars. *See also* Boyd Affidavit, Ex. 4 at 0598; Schrock Affidavit,

Ex. 4 at 0613. Joy submitted sales data showing that, while initial sales of the AC-DC shuttle cars were slow, by 1975, Joy's sales had increased to 186 units annually. (Ex. 4 at 0570). This figure apparently represents a not insignificant percentage of the total shuttle car market. *See* Ex. 4 at 0583 (total market in 1979 was 667 units). Most telling is a Harvard Business School report, which states, "Until the mid-1970's, NMS was the market leader, but Joy's development of an AC DC power drive had moved Joy into the market lead." Ex. 4 at 0583. *See also* Blutreich Deposition, Ex. 4 at 0751 (NMS perceived a need to develop an AC-DC shuttle car in 1976 to gain market share).

In arguing that there is no genuine issue of material fact, the Commissioner primarily asserts that there is no nexus between the evidence of the secondary considerations and the claimed invention. Such a nexus is required for the evidence to be given substantial weight in the obviousness determination. *Stratoflex*, 713 F.2d at 1539, 218 USPQ at 879. However, the Commissioner has not met his burden to prevail on summary judgment. The Federal Circuit has indicated that a prima facie case of nexus is made out when the patentee shows both that there is commercial success and that the thing that is commercially successful is the invention disclosed and claimed in the patent. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392, 7 USPQ2d 1222, 1226 (Fed.Cir.), *cert. denied*, —— U.S. ——, 109 S.Ct. 395, 102 L.Ed.2d 383 (1988). In this case, a reasonable inference of commercial success can be drawn from the evidence of record. Moreover, what was commercially successful was apparently the AC-DC shuttle car claimed by the '864 patent.

The evidence of record is sufficient to create an inference that Joy's patented AC-DC shuttle car was met with initial skepticism by the industry, but latter was commercially successful. Such an inference is sufficien at this stage to overcome the Commissioner's motion for summary judgment. Whether in fact there is a nexus between the evidence and the claimed invention and, if so, the weight to be accorded the evidence remain issues for trial.

VI. *Conclusion*

For the reasons stated, the Commissioner's motion for summary judgment of obviousness is denied. Pursuant to Rule 56(d), the facts relating to the scope and content of the prior art, the level of ordinary skill in the art, and the differences between the claimed invention and the prior art are deemed established in accord with this Memorandum. Trial will be limited to the factual issues relating to the objective indicia of nonobviousness.

ORDER

Upon consideration of defendant's Motion for Summary Judgement and accompanying Memorandum in Support, plaintiff's Opposition and Supplemental Memorandum, and defendant's Reply, and for the reasons set forth in the accompanying Memorandum, it is by the court this 12th day of March, 1990.

ORDERED that the defendant's motion is denied, and it is further

ORDERED that the following facts appear without substantial controversy, and such facts shall, on trial of this action, be deemed established:

A. *Background*

1. U.S. Patent 4,042,864 (the '864 patent) issued August 16, 1977, to Joy Technologies, Inc. (Joy), as assignee of the inventor Melvin N. Norris.

2. On reexamination of the '864 patent, the Board of Patent Appeals and Interferences (Board) affirmed the reexamination examiner's rejection of claims 1 to 4, 11, 12, 16, and 18 under 35 U.S.C. § 103 (1982 & Supp. V 1987) as obvious. Joy has filed this action under 35 U.S.C. § 145 (1982), which creates a remedy by civil action for patentees dissatisfied with the decision of the Board.

3. The '864 patent relates to an AC-DC traction drive control system for a coal mine shuttle car. The shuttle car has a machine body and four steerable wheels. The wheels are separately driven by DC traction motors. Electrical power is supplied to the car by means of a trailing cable which supplies three phase AC. The car includes conversion circuitry for

converting AC to DC in order to power the traction motors. The AC is applied to the primary windings of a transformer. AC output from the transformer secondary windings is rectified to DC and applied to the traction motors. The shuttle car includes a control means which permits the transformer to be selectively activated in different winding configurations to provide different levels of output to the traction motors. The '864 patent includes three independent claims.

4. Shuttle cars must operate in a limited space in the underground coal passageways. In addition, the coal mine is often an explosive environment and legal restrictions limit the type of electrical circuitry that can be used on the shuttle car.

5. The Joy patent describes two types of prior art shuttle cars. AC type shuttle cars are powered by alternating current and utilize AC drive motors. DC type shuttle cars are powered by direct current and utilize DC drive motors.

B. *Scope of the Prior Art*

6. The '864 patent describes the invention as relating "to a control drive system for a vehicle operating between two points and, more particularly, to a control drive system wherein AC is converted to DC aboard the vehicle for energizing the drive means of the vehicle." '864 patent at col. 1, lines 12-16.

7. Shuttle cars are within the inventor's field of endeavor.

8. During the prosecution of the patent application, Joy's prosecution attorneys advised the examiner that pertinent art may possibly reside in the field of power excavators. Amendment filed Dec. 28, 1976.

9. The *Standard Handbook for Electrical Engineers* shows that shovels, such as the P & H mine shovel, are power excavators.

10. During the reexamination, Joy stated that "[e]lectric locomotives and shuttle cars have existed side by side in coal mines since the inception of shuttle cars in the 1940's." Brief for Appellant dated July 8, 1987. Electric drives on both the locomotives and on shuttle cars operate in the same environment, and both are haulage vehicles.

11. The P & H shovel references and the electric locomotive references are reasonably pertinent to the control drive system problem faced by the inventor.

12. The P & H shovel references, the electric locomotive references, and the prior art shuttle cars are analogous art.

C. *Content of the Prior Art*

13. The Joy patent describes the advantages and disadvantages of AC and DC shuttle cars.

14. U.S. Patent No. 3,257,597 to Weiser recognized that AC traction motors were considerably more bulky and less efficient than DC motors. The reference recognizes that various attempts have been made in the electric locomotive field to convert AC input to DC output to combine the advantages of an AC power distribution system with a DC propulsion system.

15. U.S. Patent No. 2,549,405 recognizes that DC drive motors are advantageous because of their easily obtainable variable speed, but for long-distance trolley locomotives, AC is advantageous because of the ease with which voltages may be increased for power transmission and decreased for utilization.

16. The article by Barnes, *Mining with a-c power*, Mechanization, October 1960, sets forth many reasons for the trend toward AC mining from DC mining, including increased efficiency of power transmission.

17. The P & H shovel references relate to a surface mine loader. The shovel has a DC traction motor and a three phase AC power supply rectified in controllable amounts for application to the DC motor. The power conversion system includes a transformer with a three phase AC output. The AC is rectified to DC using thyristors, or silicon controlled rectifiers.

18. French Brevet d'Invention No. 1,152,782 (the French patent) relates to a fixed wheel rail vehicle. The locomotive has an AC-DC conversion system, in which a single phase AC power supply is converted in controllable amounts for application to a DC motor. The conversion system includes a transformer and rectifiers. The output of the conversion system is controlled by selecting different configurations of transformer windings.

19. U.S. Patent No. 2,434,585 to Renshaw shows an electric locomotive energized by either a trolley conductor or a cable reel.

20. U.S. Patent No. 1,123,602 to Sessions shows a coal mine locomotive with a cable reel.

21. U.S. Patent No. 2,599,061 to Lee shows a prior art shuttle car, which is powered through use of a cable reel.

22. The article by J. Oliver, et al., *Electric Locomotives for the Muskingum Electric Railroad*, IEEE Conference Record of 1968 Third Annual Meeting of the IEEE Industry and General Applications Group, Sept.-Oct. 1968, shows an AC-DC conversion system

for use on an aboveground electric railroad. The article shows that the output from the conversion system transformer can be controlled in a step-by-step fashion using switches with select different secondary windings of the transformer.

D. *Differences Between the Prior Art and the Claimed Invention*

23. Prior art DC shuttle cars did not utilize the transmission of AC power through the trailing cable and did not convert AC to DC on the shuttle car.

24. Prior art AC shuttle cars did not convert AC to DC on the shuttle car and utilized AC traction motors rather than DC motors.

25. Prior art shuttle cars did not show the particular means for converting AC to DC in a step-by-step fashion as recited in independent claim 16.

26. Several prior art references show the conversion of single phase AC rather than three phase AC.

27. The P & H shovel and the electric locomotives are too large or dangerous to use in the environment of the shuttle car.

28. The shovel and the electric locomotives cannot be modified to operate as shuttle cars, and their electrical circuitries cannot be used on a shuttle car.

29. The P & H shovel is a huge above-ground loader, not a haulage vehicle.

30. Electric locomotives do not travel in random paths in an explosive underground environment.

E. *Level of Ordinary Skill in the Art*

31. The cited references reflect the appropriate level of ordinary skill in the art.

32. One of ordinary skill in the art to which the subject matter of the invention pertains would have knowledge of the operating conditions for shuttle cars.

APPENDIX C

UNITED STATES DISTRICT COURT
DISTRICT OF COLUMBIA

Civ. A. No. 88-3656-OG

JOY TECHNOLOGIES, INC., PLAINTIFF

v.

HARRY F. MANBECK, JR., Commissioner of Patents and Trademarks, DEFENDANT

Nov. 14, 1990

OPINION

BENNETT, Senior Circuit Judge.*

This case is before the court following a bench trial held June 25 and 26, 1990. This court has jurisdiction over the parties and the subject matter under 35 U.S.C. § 145 and § 306 (1988). The plaintiff, Joy Technologies, Inc. (Joy), brought this action against the defendant, the Commissioner of Patents and Trademarks (Commissioner),[1] under 35 U.S.C. § 145

---

* Marion T. Bennett, Senior Circuit Judge, United States Court of Appeals for the Federal Circuit, sitting by designation. 28 U.S.C. § 291(b) (1988).

[1] Joy originally named as defendant then-Commissioner Donald J. Quigg. This court *sua sponte* ordered the substitution of the present Commissioner, Harry F. Manbeck, Jr., pursuant to Rule 25(d), Fed.R.Civ.P.

(1988) challenging the reexamination decision of the Patent and Trademark Office, which held claims 1 to 4,042,864 (the '864 patent) unpatentable under 35 U.S.C. § 103 (obviousness).

On March 12, 1990, this court denied the Commissioner's motion for summary judgment that the invention set forth in the claims at issue would have been obvious and that the decision of the Patent and Trademark Office Board of Patent Appeals and Interferences (Board) was correct. *Joy Technologies, Inc. v. Quigg*, 732 F.Supp. 227, 14 USPQ2d 1432 (D.D.C.1990). This court held that genuine issues of material fact existed concernnig objective indicia of nonobviousness. However, Joy had failed to raise a genuine issue as to the other factual issues concerning the scope and content of the prior art, the level of skill in the art, and the differences between the prior art and the claimed invention. Those facts were therefore deemed established pursuant to Fed. R.Civ.P. 56(d) and were set forth in an order accompanying the decision denying the motion for summary judgment. The trial held June 25, and 26 was limited to issues relating to the objective evidence of nonobviousness.

As explained below and as fully set forth in the appended Findings of Fact Relating to Objective Indicia of Nonobviousness, the court finds that while Joy has shown that its AC-DC shuttle car was commercially successful, Joy has not shown a nexus between the commercial success and the invention recited in the claims. Rather, the success was due to features of the particular electronic circuitry disclosed in the patent and used in Joy's commercial embodiment, but not recited in the broad independent claims and dependent claims at issue. Therefore, Joy's

commercial embodiment, but not recited in the broad independent claims and dependent claims at issue. Therefore, Joy's evidence of commercial success does not have substantial weight. The other objective evidence presented by Joy likewise does not have substantial weight, as explained below. The court concludes that, in view of the prior art, the invention of claims 1 to 4, 11, 12, 16, and 18 would have been obvious to a person of ordinary skill in the art at the time the invention was made.

I. BACKGROUND

The technology at issue in this suit was explained in this court's prior opinion. For convenience of reference, the explanation is repeated here. The '864 patent, which names Melvin Norris as inventor, relates to an AC-DC traction drive control system for a coal mine shuttle car. Shuttle cars are used in coal mines to transfer loose coal from the work area, where the coal is mined, to an unloading area, where conveyor belts or cars transfer the material out of the mine.

The coal mine is a hostile environment. Coal seams are often only a few feet thick, and because it is uneconomical to excavate rock surrounding the coal seam, shuttle cars must be designed to operate in a confined space. Moreover, mine operators utilize the "room and pillar" mining method, wherein pillars of coal are left in place for roof support in the mine. Shuttle cars must be designed to negotiate the sharp corners around the pillars.

More importantly, coal mining often releases methane gas, which is explosive. As the mining operations proceed, crosscut tunnels are made and venti-

lation equipment is put in place to remove the methane gas. However, at the face area (where the coal is mined) adequate ventilation cannot be achieved, and the risk of explosions due to the concentration of methane gas is greatest. Therefore, government regulations require that only "permissible" equipment be used in the face area. Permissible equipment must have electrical circuitry enclosed in an explosion-proof compartment to avoid hazards associated with electrical sparks. Thus, the equipment on a shuttle car must be designed to fit on the car, while at the same time leaving room on the car to haul an adequate amount of coal, and the equipment must be designed to be permissible.

Shuttle cars are essentially electrically powered haulage vehicles. Traction drive motors power the wheels to propel the vehicle. The car has auxiliary equipment, such as hydraulic pump motors and conveyor motors, which are used in loading and unloading the coal. Shuttle cars were first introduced in the late 1930s.

In the prior art, shuttle cars were of two types, the AC type and the DC type. AC shuttle cars are powered by alternating current (AC) supplied by a trailing cable and utilize AC motors for driving the wheels. DC shuttle cars are powered by direct current (DC) supplied by a trailing cable and have DC drive motors.

Each of the types of prior art shuttle cars had its advantages and disadvantages. For example, AC trailing cables were more expensive, and it was more difficult to locate "faults" in the cable. (A "fault" results when the wire inside the cable breaks.) However, AC is capable of being transmitted more efficiently over distances. DC cables are less expensive

and faults are more easily located because interruption of DC causes sparks, which may burn the cable. At the same time, such sparking increases the hazards associated with DC trailing cables. Moreover, power losses associated with the transmission of DC over distances may be significant.

AC motors are considerably more bulky and less efficient than DC motors when used for traction purposes. DC motors are much better suited for traction drive, but AC motors are better for the auxiliary systems on the shuttle car. Finally, in the prior art, other mine equipment at the face area was AC-powered, and if DC shuttle cars were to be used, expensive skid-mounted rectifiers capable of powering whole mine sections had to be bought to convert the AC to DC in order to operate the DC shuttle cars.

Mr. Norris was the first to convert AC to DC on board a shuttle car used commercially. Development of his invention took years of time-consuming effort. In his shuttle car, three phase AC is supplied to the car by means of an AC trailing cable. On board the car, the AC is converted to DC, which is applied to DC traction motors for powering the wheels. The conversion circuitry includes a transformer and a diode bridge rectifier. The incoming AC is applied to the primary windings of the transformer. The AC output from the secondary windings of the transformer is rectified to DC and applied to the traction motors. The shuttle car described in the patent includes a control means which permits the transformer to be selectively activated in different secondary winding configurations to provide different levels of output to the traction motors. The shuttle car may include auxiliary AC motors for operating the hydraulic pump and the conveyor. The auxiliary motors are

powered with a portion of the AC from the trailing cable.

II. OBJECTIVE INDICIA OF NONOBVIOUSNESS

The trial centered upon Joy's objective evidence of nonobviousness. The court's detailed findings concerning the evidence of "secondary considerations" are fully set forth in the appended findings of fact. Only those findings necessary to the decision are set forth in this opinion.

Objective evidence of nonobviousness must always be considered, when present, as part of the obviousness determination. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538-39, 218 USPQ 871, 879 (Fed. Cir.1983). Evidence of secondary considerations is not necessarily conclusive on the issue of obviousness. *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 306, 227 USPQ 657, 674 (Fed.Cir. 1985), *cert. denied*, 475 U.S. 1017, 106 S.Ct. 1201, 89 L.Ed.2d 315 (1986).

A "nexus" is required between the merits of the claimed invention and the objective evidence in order for the evidence to be given substantial weight in the obviousness determination. *See Stratoflex*, 713 F.2d at 1539, 218 USPQ at 879 ("A nexus is required . . . if that [objective] evidence is to be given substantial weight. . . ."); *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1555, 220 USPQ 303, 314 (FedCir.1983), *cert. denied*, 469 U.S. 851, 105 S.Ct. 172, 83 L.Ed.2d 107 (1984) ("The objective evidence of nonobviousness . . . may in a given case be entitled to more weight or less, depending on its nature and its relationship to the merits of the invention."). *See also Sjolund v. Musland*, 847 F.2d 1573, 1582, 6

USPQ2d 2020, 2028 (Fed.Cir.1988) ("Commercial success is relevant only if it flows from the merits of the *claimed* invention"); *Avia Group International, Inc. v. L.A. Gear California, Inc.*, 853 F.2d 1557, 1564, 7 USPQ2d 1548, 1554 (Fed.Cir.1988) ("Although commercial success is relevant only if a nexus is proven between the success of the patented product and the merits of the claimed invention. . . ."); *In re Felton*, 484 F.2d 495, 501, 179 USPQ 295, 299 (CCPA 1973) ("A nexus between the merits of the invention and the evidence offered must be established before that evidenc becoms rlvant to the question of obviousness.") A "nexus" is a legally and factually sufficient connection between the objective evidence and the claimed invention, such that the objective evidence should be considered in the determination of nonobviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392, 7 USPQ2d 1222, 1226 (Fed.Cir.), *cert. denied*, 488 U.S. 956, 109 S.Ct. 395, 102 L.Ed.2d 383 (1988). The burden of proving a nexus is on the applicant or patent owner. *Id.* at 851 F.2d 1392, 7 USPQ2d at 1226.

An important aspect of the proof of nexus is that the "[o]bjective evidence of non-obviousness must be commensurate in scope iwth the claims which the evidence is offered to support." *In re Tiffin*, 448 F.2d 791, 792, 171 USPQ 294, 294 (CCPA 1971); *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972); *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) ("The comparative test data offered by appellant as evidence of the superiority of this claimed method does not rebut the prima facie case of obviousness because it is not commensurate in scope with the claims."). The objective evidence is not commensurate with the claims if

the claims are broader than the scope of the objective evidence. *See Tiffin*, 448 F.2d at 792, 171 USPQ at 294 (evidence of commercial success and satisfaction of long-felt need with respect to "cups" not commensurate with the scope of claims broadly reciting "containers"); *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 778-79 (Fed.Cir.1933) (experiments purporting to show unexpected results using sodium are not commensurate in scope with broad claims to a catalyst with "an alkali metal"). The claims are broader in scope than the objective evidence if a limitation or element recited in the claim is broader than the limitation or element in the objective evidence (*see Tiffin*, 448 F.2d at 792, 171 USPQ at 294 ("cups" in the objective evidence versus "containers" in the claims)) or if the objective evidence contains limitations or elements not recited in the claims. *See White v. Jeffrey Mining Machinery Co.*, 723 F.2d 1553, 1559, 220 USPQ 703, 706 (Fed.Cir.1983), *cert. denied*, 469 U.S. 825, 105 S.Ct. 104, 83 L.Ed.2d 49 (1984) ("That Jeffrey's miner enjoyed commercial success does not support an implication that the jury found that a nexus existed between such success and the claimed invention, because the Jeffrey machine included several features not disclosed or claimed in the White patent."); *In re Fenn*, 639 F.2d 762, 765, 208 USPQ 470, 472 (CCPA 1981) ("the brochure indicates that the diaphragms in the cells allegedly receiving commercial acceptance possessed at least six features not present in the diaphragm prepared by appellant's method. . . .").

A. *Commercial Success*

In this case, Joy presented much evidence on the commercial success of its AC-DC shuttle car. The

evidence shows that sales of the shuttle car rapidly increased following its introduction in 1970, and since 1976, shipments of AC-DC shuttle cars have generally accounted for over 60% of Joy's total shipments of shuttle cars (which also included AC and DC shuttle cars). Moreover, from 1970 to 1988, Joy's share of the entire shuttle car market has increased from 42% to as much as 86%. Over that time, Joy's market share has been about 60-70% of the entire market. The evidence supports the conclusion that Joy's AC-DC shuttle car has been commercially successful.

Nevertheless, the commercial success was due to certain features of the Joy shuttle car which are not recited in the claims at issue. Thus, the commercial success is not commensurate with the scope of the claims at issue, and the evidence of commercial success does not have substantial weight as to non-obviousness.

At least initially, the Joy AC-DC shuttle cars sold commercially included the circuitry as shown in the '864 patent specification. That circuitry includes a timing circuit and a dynamic braking feature. The timing circuit regulates the energization of the traction motors and permits the startup of the shuttle car at a slow rate of speed, with the shuttle car accelerating as the energization increases. Timing circuit means is recited is dependent claims 5 and 6, which were determined to be patentable in the reexamination proceeding; timing circuit means is not recited in the claims at issue.

The dynamic braking feature is provided by a control system which permits theh traction drive motors to operate as DC generators so that energy stored in the moving car can be dissipated in the resistors of

the circuitry. That feature permits the car to slow at a safe speed to apply power in the reverse direction. Dynamic braking means is recited in dependent claims 13 and 17, which were determined to be patentable in the reexamination proceeding. Dynamic braking means is not recited in the claims at issue and is not inherent in an AC-DC drive.

One of the witness, E.M. Warner, wrote an article describing the Joy AC-DC shuttle car. *Status Report on Solid State Controls for Underground Mining Machines*, Mining Congress Journal, March 1973. In the article, he described how the timing and dynamic braking circuitry of the Joy AC-DC shuttle car overcomes problems associated with "plugging" shuttle car motors. A shuttle car operator "plugs" the motors when he pushes on the reverse foot pedal while the car is moving in one direction in order to stop the car or to reverse it. This sudden reversal of the electric current to the motors has detrimental effects on the motors and the controls. The timing and dynamic braking circuits prevent high currents when plugging, resulting in smooth stopping and prevention of shock loading on the shuttle car gearing.

One of the first large orders for Joy AC-DC shuttle cars was placed by Peabody Coal Company. The order resulted from a demonstration of the AC-DC shuttle car by Mr. Norris and others. In that demonstration, a bolt was placed on top of the machine, and the shuttle car was run full speed in one direction and suddenly plugged to reverse it. The machine was run at full speed back and forth without upsetting the bolt. The demonstration showed that the shuttle car could be subjected to plugging without damaging the motors, gearing, or drive shafts. The Peabody Coal personnel considered that to be a posi-

tive demonstration because that type of control would greatly lower both the electrical and mechanical maintenance of the car.

The evidence shows that the main reason for the commercial success of the Joy AC-DC shuttle car was the reduced operating costs due to elimination of shock loading and stresses in the traction drive system. That feature was the result of the specific circuitry used in the Joy shuttle car; i.e., the timing and dynamic braking circuitry. Without that circuitry, the car would not have been as commercially successful. However, the timing circuitry and dynamic braking features are not recited in the claims at issue. Therefore, Joy has not established a nexus between the commercial success and the invention recited in the claims at issue. *See Sjolund v. Musland*, 847 F.2d 1573, 1582, 6 USPQ2d 2020, 2028 (Fed.Cir. 1988) (jury not entitled to draw the inference that the success of the device was due to the merits of the claimed invention where "all the evidence was to the effect that its commercial popularity was due to . . . a feature not claimed.").

Aside from the timing circuitry and dynamic braking features, other evidence shows that Joy has not established a nexus between the commercial success and the invention recited in the claims. In Joy's AC-DC shuttle car, DC power is not switched under load. When DC is interrupted, electrical arcs may result, which could damage electrical components. AC is more easily interrupted because it passes through zero 60 times a second. In the Joy AC-DC shuttle car, AC power is switched off before DC currents are switched. This important feature is not recited in the claims at issue.

In addition, Joy has developed a SCR (*S*ilicon *C*ontrolled *R*ectifier) version of its AC-DC shuttle car.

Neither party submitted evidence on whether SCR-based conversion circuitry is structurally equivalent to the diode bridge circuitry described in the '864 patent; therefore, there is no evidence as to whether the SCR control circuitry is covered by the "conversion means" or "rectifier means" limitations in the apparatus claims at issue. The figures Joy has provided for its shipments of AC-DC shuttle cars do not distinguish between the numbers of diode bridge cars and SCR cars. The testimony also showed that Joy continually made other improvements to its commercial AC-DC shuttle cars to make them more reliable and maintainable. The absence of evidence as to the effect of these modifications on the commercial success provides further support for the conclusion that Joy has not shown a nexus between the commercial success and the merits of the claimed invention. *See In re Vamco Machine & Tool, Inc.*, 752 F.2d 1564, 1577 n. 5, 224 USPQ 617, 625 n. 5 (Fed.Cir. 1985) ("the commercial success of a machine 'claimed' may be due entirely to improvements or modifications made by others to the invention *disclosed* in a patent. Such success, we are holding, is not pertinent to the non-obviousness of the invention disclosed.").

Joy's evidence of commercial success is not commensurate in scope with tis broad claims. Therefore, Joy has not shown a nexus between its evidence of commercial success and the merits of the invention recited in the claims. The evidence that the Joy AC-DC shuttle car was commercially successful does not have substantial weight.

B. *Skepticism*

Expressions by experts of skepticism concerning the invention constitute strong objective evidence of nonobviousness. *Environmental Designs, Ltd. v.*

Union Oil Co. of Cal., 713 F.2d 693, 697-98, 218 USPQ 865, 869 (Fed.Cir. 1983), *cert. denied*, 464 U.S. 1043, 104 S.Ct. 709, 79 L.Ed.2d 173 (1984); *Burlington Industries, Inc. v. Quigg*, 229 USPQ 916, 918-19 (D.D.C. 1986), *aff'd*, 822 F.2d 1581, 3 USPQ2d 1436 (Fed.Cir. 1987). In this case, Joy presented a variety of evidence that people were skeptical of the AC-DC shuttle car when it was introduced. However, the evidence shows that the skepticism about the Joy AC-DC shuttle car was directed to economic and commercial factors, not the technical merit of AC to DC conversion on board a shuttle car. There is no evidence showing skepticism related to any technical reasons why one of ordinary skill in the art could not have made the claimed invention. The evidence of skepticism does not have substantial weight.

C. *Expert Opinion*

Dr. J. Hilary Kelley, former Dean of Mineral and Energy Resources at West Virginia University, first learned of the Joy AC-DC shuttle car in the early or mid-1970s and was so impressed that he traveled to Joy's plant to learn more about it. He did not address the car in operation. Dr. Kelley considered the AC-DC shuttle car to be a revolutionary development.

Dr. Kelley's testimony that he found the Joy AC-DC car to be revolutionary is not especially persuasive. While he testified that he may have had sufficient academic credits for a bachelor's degree in electrical engineering, there was no showing that he was qualified in the subject matter of control drives. In addition, he acknowledged that prior to his learning about the Joy AC-DC shuttle car, there had been discussions about the desirable features of AC con-

trols and DC traction motors, and he stated that there was naturally a desire to have the advantages of AC control and the advantages of DC traction. However, there was no showing that Dr. Kelley was familiar with the prior art AC-DC drive systems that were used in other mining operations and that may have suggested a solution to the problem he recognized. Thus, the evidence did not show whether Dr. Kelley's opinion that the Joy control system was revolutionary was based on any comparison of the invention recited in the claims with AC-DC conversion systems that were known in the prior art.

D. *Copying*

Copying of a claimed invention may be evidence of nonobviousness. *Pentec, Inc. v. Graphic Controls Corp.*, 776 F.2d 309, 317, 227 USPQ 766, 771 (Fed. Cir. 1985). However, "more than the mere fact of copying by an accused infringer is needed to make that action significant to a determination of the obviousness issue." *Cable Electric Products, Inc. v. Genmark, Inc.*, 770 F.2d 1015, 1028, 226 USPQ 881, 889 (Fed.Cir. 1985). Here, there is no evidence to show that the *claimed invention* was copied or, if so, why it was copied. National Mine Service introduced an AC-DC shuttle car in about 1980 but did not duplicate the circuitry of the Joy AC-DC shuttle car. A 1979 advertisement shows that FMC also introduced an AC-DC shuttle car. The advertisement does not show what, if anything, of the claimed invention was copied. The evidence of copying does not have substantial weight.

III. OBVIOUSNESS OF THE INVENTION OF THE CLAIMS AT ISSUE

Under 35 U.S.C. § 103 (1988), a patent on an invention may not be obtained

> if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Under *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 86 S.Ct. 684, 693-94, 15 L.Ed.2d 545 (1966), four factual inquires must be made in the obviousness determination: (1) the scope and content of the prior art; (2) the differences between the prior art and the claimed invention; (3) the level of ordinary skill in the art; and (4) "secondary considerations" which serve as objective indicia of nonobviousness.

In the prior proceedings in this case, facts relating to the scope and content of the prior art, the level of ordinary skill in the art, and the differences between the claimed invention and the prior art appeared without substantial controversy and so were deemed established as set forth in this court's order and memorandum of March 12, 1990 (*see* 732 F.Supp. 227, 14 USPQ2d 1432). In summary, the court first decided that Joy had not shown that there was a genuine issue of material fact as to the scope of the prior art. The court determined that the record showed without genuine dispute that shuttle car technology, aboveground mine shovel technology (the P & H shovel references), and locomotive technology were all within the scope of the relevant prior art. The court also determined that the teachings of the

references are evident from the references themselves and Joy had not raised any genuine issue of material fact concerning the content of the prior art. Finally, the court held that there was no genuine issue of material fact concerning the level of skill in the art and the differences between the prior art and the claimed invention. Familiarity with the prior order and memorandum is presumed, and they are incorporated herein by reference.

The invention of the claims at issue would have been obvious to a person of ordinary skill in the art in view of the prior art cited. As discussed above, prior art shuttle cars were either AC-type or DC-type. The relative advantages and disadvantages of each type of power system were known in the art. U.S. Patent No. 3,257,597 to Weiser recognized that AC motors were considerably more bulky and less efficient than DC motors when used for traction purposes and that attempts had been made to convert AC input to DC output in the electric locomotive field in order to combine the advantages of AC power distribution and DC propulsion systems. The Alexanderson patent, U.S. Patent No. 2,549,405, recognized that DC drive motors are advantageous in trolley locomotives because of their easily obtainable variable speeds, but for long-distance operations, AC is advantageous because of the ease with which voltages may be increased for power transmission and decreased for ultization. The Barnes article[2], *Mining*

---

[2] At trial, Joy objected to the admission of the Barnes article on the basis of hearsay. The court received the article in evidence, but stated that the weight to be accorded the article would be decided later.

The Barnes article is admissible. A prior art document submitted as a "printed publication" under 35 U.S.C. § 102(a)

with a-c power, Mechanization, October 1960, sets forth many reasons for the trend toward AC mining from DC mining, including the increased efficiency of power transmission. Finally, at trial Dr. Kelley testified that it was common knowledge that DC had advantages and disadvantages, and he believed that the disadvantages of DC are solved by features of AC equipment. He stated that there was naturally a desire to have the advantages of AC control and the advantages of DC traction.

Based on the known relative advantages and disadvantages of AC and DC systems, one skilled in the art would have desired to combine an AC control system and a DC traction drive on a shuttle car in order to have the advantages of both. The P & H shovel references and the locomotive references would have made it obvious to one of ordinary skill in the art how that combination of AC power and DC traction could be made.

The P & H shovel references relate to an above-ground surface mine loader. The shovel has a DC traction motor and a three phase AC power supply rectified in controllable amounts for application to the DC motor. The power conversion system of the shovel includes a transformer with a three phase AC output. Silicon controlled rectifiers ("thyristors") rectify the AC output to DC. The references show that a portion of the AC power supply is diverted for application to AC auxiliary equipment.

---

is offered simply as evidence of what it describes, not for proving the truth of the matters addressed in the document. Therefore, it is not hearsay under Fed.R.Evid. 801(c).

The weight to be accorded the Barnes article in this case is the same as the weight to be accorded any of the other prior art documents.

French Brevet d'Invention No. 1,152,782 (the French patent) relates to a locomotive which has an AC-DC conversion system. Single phase AC power is converted in controllable amounts for application to a DC motor. The conversion system includes a transformer and rectifiers. The output of the conversion system is controlled by selecting different configurations of transformer windings.

U.S. Patent No. 2,434,585 to Renshaw shows an electric locomotive energized by either a trolley conductor or a cable reel. The Sessions patent (U.S. Patent No. 1,123,602) shows a coal mine locomotive with a cable reel. U.S. Patent No. 2,599,061 to Lee shows a prior art shuttle car, which is powered through use of a cable reel. Finally, the Muskingum Electric Railroad article in IEEE Conference Record of 1968 Third Annual Meeting of the IEEE Industry and General Applications Group, Sept.-Oct. 1968, shows an AC-DC conversion system for use on an aboveground electric railroad. The article shows that the output from the conversion system transformer can be controlled in a step-by-step fashion using switches which select different secondary windings of the transformer.

Independent claim I recites a mobile coal haulage machine, such as a shuttle car, having a DC traction motor, conversion means for converting three phase AC to DC output, control means for controllably applying the DC output to the traction motor and a trailing cable for supplying three phase AC.

It would have been obvious to one of ordinary skill in the art to modify the prior art shuttle cars in order to utilize the known advantages of AC control and DC traction by using an AC-DC conversion system as suggested by the P & H shovel references or the loco-

motive references. Those references show an AC-DC conversion system for rectifying three phase AC power to DC for application to DC traction motors. In the French patent and Muskingum electric railroad article, the output of the conversion system is controlled by selecting different winding configurations of the transformer. The references show that AC may be supplied through a trailing cable. The apparatus of claim 1 would have been obvious in view of the prior art.

Independent claim 16 is directed to a control drive system for a steerable wheeled vehicle such as a shuttle car. The control drive system includes a conversion means for converting AC input to DC output for application to DC traction motors. The conversion means has a transformer having a plurality of different configurations of secondary windings. The control means operates by selecting one of the secondary winding configurations so that the degree of energization of the DC traction motors can be controlled.

The basic elements of the AC-DC conversion system have been discussed above respecting claim 1. The French patent and the Muskingum railroad article each show that the output from the conversion system can be controlled by selecting different configurations of transformer windings. The control drive system of claim 16 would have been obvious in view of the prior art.

Claim 18 is directed to a method of operating a mobile machine in an underground passageway of a mine. The method includes the steps of reeling and unreeling a trailing cable, converting three phase AC input to DC output, and energizing the traction motors by the DC output.

The method of claim 18 is inherent in the use of the apparatus recited in claims 1 and 16. The specific limitations of claim 18 would have been obvious in view of the prior art as discussed above respecting claims 1 and 16.

Joy did not separately argue the patentability of the dependent claims at issue. Therefore, those claims stand or fall with the independent claims. *In re Nielson*, 816 F.2d 1567, 1572, 2 USPQ2d 1525, 1528 (Fed. Cir. 1987).

Joy's principal argument for the patentability of the claims relates to the main difference between the prior art mine shovel and locomotive references and the Joy shuttle car; namely, the necessity of shuttle cars being permissible equipment in order to operate at the face area of the coal mine. Joy asserts that the inventor was faced with the problem of designing a drive that could be placed within the permissible enclosures of existing shuttle cars. According to Joy, the prior art P & H shovel and electric locomotives were too large and were not permissible equipment. Joy states that one skilled in the art could not use them in designing a shuttle car because incorporating the features of the shovel or locomotive on a shuttle car would result in an illegal machine. Therefore, asserts Joy, the references provide no guidance in designing an AC-DC shuttle car.

Joy's arguments are unavailing for two reasons. First, as explained in the court's prior decision, the independent claims do not recite the elements that allegedly make the shuttle car operable in the underground mining environment. Instead, the claims are broadly written to cover AC-DC conversion systems on machines such as shuttle cars. *See In re Yamamoto*, 740 F.2d 1569, 1571, 222 USPQ 934, 936

(Fed.Cir. 1984) (claims are to be given their broadest reasonable construction, consistent with the specification, during reexamination). Limitations cannot be read into the claims to overcome validity challenges. *E.I. Du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433-34, 7 USPQ2d 1129, 1131-32 (Fed.Cir.), *cert. denied*, 488 U.S. 986, 109 S.Ct. 542, 102 L.Ed.2d 572 (1988); *In re Self*, 671 F.2d 1344, 1348, 213 USPQ 1, 5 (CCPA 1982). Joy's arguments concerning the permissibility of its shuttle car are not based on any limitations appearing in the claims and so are not relevant to the patentability issue. *See In re Thomson*, 336 F.2d 604, 607, 143 USPQ 21, 23 (CCPA 1964), *cert. denied*, 380 U.S. 972, 85 S.Ct. 1330, 14 L.Ed.2d 268 (1965) ("Appellant's contention that the problems of miniaturization were not encountered or taught by the prior art is not relevant to the issue before us, since miniaturization resistors are not being claimed. A particular feature upon which an applicant predicates patentability must be recited in the claims; it is not sufficient merely to disclose it in the specification.").

In addition, while the prior art AC-DC conversion systems may not be permissive or may be too large to be used on a shuttle car, the test is what the prior art would have suggested to the person of ordinary skill in the art, not whether the features of the references may be bodily incorporated into a shuttle car. *See In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981); *In re Sneed*, 710 F.2d 1544, 1550, 218 USPQ 385, 389 (Fed.Cir.1983).

As discussed above, Joy's evidence of commercial success, skepticism, and copying does not have substantial weight. Dr. Kelley's testimony that he con-

sidered the AC-DC shuttle car to be "revolutionary" did not show whether his opinion was based on any knowledge of the prior art which showed AC-DC conversion systems on other mining equipment. His opinion is not especially persuasive. Claims 1, 16, and 18 would have been obvious to a person of ordinary skill in the art at the time the invention was made. The Board correctly determined that claims 1 to 4, 11, 12, 16, and 18 were unpatentable under 35 U.S.C. § 103.

IV. EXPENSES OF THE PROCEEDING

Under the reexamination statute, 35 U.S.C. § 306, a patent owner may seek judicial review of the PTO's reexamination decision by way of either direct appeal to the United States Court of Appeals for the Federal Circuit under 35 U.S.C. §§ 141-144 or by way of a civil action in this court under 35 U.S.C. § 145. Joy chose the latter.

Section 145 provides that "[a]ll the expenses of the proceedings shall be paid by the applicant." Joy asserts that it is not an "applicant" within the intent of section 145, but was involuntarily forced into these proceedings by a third party's request for reexamination. Joy argues that under 35 U.S.C. § 302 the party seeking reexamination is required to pay such fees for reexamination as determined by the Commissioner. According to Joy, the third party requester should be responsible for the Commissioner's expenses under the reexamination statute.

Joy correctly points out that "applicant" does not precisely define its status in this case. However, viewing section 145 as a whole, it is clear that "applicant" in that statute applies both to a patent applicant dissatisfied with the decision of the PTO on his initial

application and to a patent owner dissatisfied with the PTO's decision in a reexamination proceeding. Section 306 makes the court review provisions of section 145 applicable in reexamination proceedings; however, section 145 uses only the term "applicant" in referring to the party bringing the action. If section 145 is to cover civil actions arising from reexamination proceedings, the term "applicant" in that section must be construed to cover patent owners bringing those actions. Construing the term consistently throughout the section compels the conclusion that patent owners, as well as patent applicants, must pay the Commissioner's expenses.

Joy's arguments that it was involuntarily brought into these proceedings and that the reexamination requester should be responsible for the Commissioner's expenses in the section 145 action are unpersuasive. While the reexamination proceeding in the Patent and Trademark Office may have been commenced against Joy's wishes, Joy chose to bring the section 145 action. If it wished to avoid payment of the Commissioner's expenses under section 145, it could have proceeded by way of a direct appeal to the Federal Circuit under sections 141-144. In addition, while Congress has authorized the Commissioner to establish a reexamination fee to be paid by the reexamination requester, the expenses for which Joy is liable under section 145 are the expenses of this civil action, not the reexamination proceeding before the PTO.

Joy is liable for the expenses of the Commissioner in this proceeding.

V. CONCLUSION

1. The Board correctly affirmed the rejection of claims 1 to 4, 11, 12, 16, and 18 of U.S. Patent No. 4,042,864 as unpatenable under 35 U.S.C. § 103.

2. Joy shall pay the reasonable expenses of the Commissioner incurred in this proceeding.

3. A separate judgment accompanies this opinion.

ADDENDUM

FINDINGS OF FACT RELATING TO OBJECTIVE INDICIA OF NONOBVIOUSNESS

A. *Commercial Success*

1. Prior to Norris' invention, National Mine Service (National) was the principal competitor of Joy in the manufacture and sale of shuttle cars for use in underground mines.

2. Both Joy and National offered coal mine operators a choice of AC or DC drive shuttle cars.

3. At the time of the Norris invention in 1970, Joy had less than half of the shuttle car market.

4. After Joy introduced the AC-DC shuttle car in 1970, it continued to make and sell its prior AC and DC shuttle cars.

5. By personal demonstrations of the Joy AC-DC shuttle cars, Norris convinced personnel of Peabody Coal Company and Consolidated Coal Company to try the machines, and they did so following the demonstrations.

6. Both Peabody and Consolidated ordered a number of the AC-DC cars in preference to the same car with either an AC or DC system.

7. By the mid-1970s, the mining industry was getting convinced that the Joy AC-DC drive system was a much better drive than the DC or AC drive.

8. When the AC-DC shuttle car was first introduced, there was no significant price differential between the AC-DC, AC, and DC shuttle cars. Subsequently, the Joy AC-DC shuttle cars were sold at a higher price than either AC or DC cars. Since 1980, Joy's AC-DC shuttle cars have been more expensive than comparable DC shuttle cars, but less expensive than AC shuttle cars.

9. In the first two years (1970 and 1971) following introduction of the AC-DC shuttle car, Joy's shipments of its AC-DC shuttle car accounted respectively for only 27% and 4% of its total shipments of shuttle cars. Shipments of AC-DC shuttle cars increased to 47% by 1975, and increased to over 60% by 1976. Since that time, shipments of AC-DC shuttle cars have generally accounted for over 60% of Joy's total shipments.

10. At the time of the introduction of the Joy AC-DC shuttle car, Joy was one of the two largest manufacturers of shuttle cars. From 1970 to 1988, Joy's market share of the entire shuttle car market increased from 42% to as much as 86% in 1980. Over that time, Joy's market share has generally been about 60-70% of the entire market.

11. In competition with Joy's own AC and DC shuttle cars and with the products of National Mine Service, Joy's AC-DC shuttle car has met with commercial success.

12. Nevertheless, the commercial success was due to certain features of the Joy shuttle car not recited in the claims at issue. To the extent the Joy AC-DC shuttle car was commercially successful, it was an overall system design that proved its superiority.

13. At least initially, the Joy AC-DC shuttle cars that were sold commercially included the circuitry as shown in the '864 patent. The circuitry includes a control system which permits the traction drive motors to operate as DC generators so that energy stored in the moving car can be dissipated in the resistors of the circuitry. That "dynamic braking" circuitry permits the car to slow at a safe speed to apply power in the reverse direction. Dynamic braking means is recited in dependent claims 13 and 17, which were

determined to be patentable in the reexamination proceeding. Dynamic braking is not recited in the claims at issue. Dynamic braking is not inherent in an AC-DC drive.

14. The circuitry of the Joy shuttle car also includes a timing circuit for regulating the energization of the traction motors. The timing circuit permits the start-up of the shuttle car at a slow rate of speed with the shuttle car accelerating as the energization increases. Timing circuit means is recited in dependent claims 5 and 6, which were determined to be patentable in the reexamination proceeding. Timing circuit means is not recited in the claims at issue.

15. An article in evidence by Warner, *Status Report on Solid State Controls for Underground Mining Machines*, Mining Congress Journal, March 1973, describes the Joy AC-DC shuttle car drive system. According to the article, the timing and dynamic braking circuitry of the Joy AC-DC shuttle car overcomes problems associated with "plugging" shuttle car motors. A shuttle car operator "plugs" the motors when he pushes on the reverse foot pedal while the car is moving in order to stop the car or to reverse it. This suddent reversal of the current has detrimental effects on the motors and the controls. The timing and dynamic braking circuitry prevents high currents when plugging, resulting in smooth stopping and preventing shock loading on the shuttle car gearing.

16. The demonstration that convinced Peabody Coal to place orders for the Joy AC-DC shuttle cars (see Finding 5) featured the timing circuitry and dynamic braking aspects of the Joy shuttle car. In that demonstration, a bolt was placed on top of the machine, and the shuttle car was run full speed in one direction and suddenly "plugged" to reverse it.

The machine was run full speed back and forth without upsetting the bolt. The demonstration showed that the shuttle car could be subjected to "plugging" without damaging the motors or gears or drive shafts. The Peabody Coal people considered this to be a positive demonstration because that type of control would greatly lower both the electrical and mechanical maintenance on the car. The demonstration led to the order from Peabody.

17. The main reason for the commercial success of the Joy AC-DC shuttle car was the reduced operating costs due to elimination of shock loading and stresses in the traction drive system. That feature was the result of the specific circuitry used in the Joy shuttle car; i.e., the timing and dynamic braking circuitry. Without that circuitry, the shuttle car would not have been as commercially successful. However, the claims at issue do not recite the timing and dynamic braking circuitry. Therefore, the evidence shows that what was commercially successful was not the invention recited in the claims at issue.

18. Aside from the timing circuitry and dynamic braking features, other evidence shows that the commercial success may have been due to other features not recited in the claims at issue. A further advantage of the Joy AC-DC drive, not recited in the claims at issue, is that DC power is not switched under load. When DC is interrupted, electrical arcs may result, which could damage electrical components. Because AC passes through zero 60 times a second, it is more easily interrupted without arcing. An important feature of the Joy AC-DC shuttle car was switching off the AC power before switching DC under load. Switching AC rather than DC under load permitted Norris to avoid using large DC con-

tractors. This feature is not recited in the claims of the '864 patent, and the evidence does not show the effect of this feature on the commercial success of the Joy AC-DC shuttle car.

19. Joy has also developed an AC-DC SCR (*S*ilicon *C*ontrolled *R*ectifier) version of its AC-DC shuttle car. Neither party submitted any evidence on whether SCR-based AC-DC conversion circuitry is structurally equivalent to the diode bridge circuitry described in the '864 patent specification; therefore, there is no evidence to show whether the SCR control circuity is covered by the "conversion means" or "rectifier means" limitations in the apparatus claims at issue. In addition, the sales figures Joy has submitted do not separate the numbers of diode bridge and SCR AC-DC shuttle cars. Therefore, the evidence does not show the effect of the SCR option on the commercial success of the Joy AC-DC shuttle car.

20. Joy continually made improvements to the commercial AC-DC shuttle cars to make them more reliable and maintainable. One improvement was to gradually adapt the original shuttle car components to solid-state components. Also, Joy modified the original trasformer winding configurations so that it used only a delta and a star connection in the secondary windings of the transformer. Thus, later production versions of the AC-DC shuttle car did not have the secondary transformer windings with the extended star configuration recited in claims 7 and 8 at issue. Such modifications are further evidence that the Joy shuttle car that became commercially successful was not commensurate with the scope of the claims at issue.

21. In summary, while Joy has shown that its AC-DC shuttle car was commercially successful, the

evidence does not show a nexus between the commercial success and the invention recited in the claims at issue. The testimony indicates that the principal reason for the commercial success of the Joy AC-DC shuttle car was the timing circuitry and the dynamic braking feature. Those features are not recited in the claims at issue. Moreover, as initially sold, the Joy shuttle car included the circuitry disclosed in the '864 specification; however, the circuitry in the shuttle car has been modified in several ways. The evidence does not show the effect of those modifications on the commercial success of the shuttle car. The evidence that Joy presented relates to the commercial success of the specific machine it sold, which included several features and modifications not present in the claimed invention. The evidence was therefore not commensurate in scope with the claims. Joy's evidence of commercial success is not entitled to substantial weight in the obviousness determination.

B. *Skepticism*

22. Joy's sales manager, Carl Schrock, had little or no confidence in an AC-DC drive for shuttle cars and believed that it would not be a successful product. Mr. Schrock's opinion was that Joy would have a difficult time selling the shuttle cars due to the difficulty of locating faults in the AC trailing cable and splicing them once found.

23. John Boyd, a leading professional mining consultant, thought an AC-DC drive unnecessary. In his opinion, either AC drive or DC drive was satisfactory. Mr. Boyd's skepticism was due to the perceived disadvantages of AC trailing cables and the shuttle car's electrical control system, which in his

opinion would create substantial maintenance problems in keeping the shuttle car in operation.

24. Joy's competitor, National Mine Service, a leading manufacturer of shuttle cars at the time, prepared a comparison between its shuttle car and the Joy AC-DC shuttle car which criticized the AC-DC drive and showed that it believed that its conventional DC drive had superior qualities and advantages. The comparison was prepared as a sales tool by NMS to educate salesmen. The comparison answers a number of claims of superiority Joy had made, including claims relating to a smaller size trailing cable, higher electrical efficiency, better performance, lower maintenance and increased safety. The comparison also discusses the traction speed compensator and dynamic braking features of the Joy shuttle car. The comparison concludes that the advantages claimed for the Joy AC-DC shuttle car have been mostly present on the NMS shuttle car for many years, "without any need for an on-board rectifier and all the associated complexity and difficulty of maintenance that the AC-DC car has to put up with."

25. A district manager, Ed Dansereau, secured an order for the first two cars sold with Norris' invention from a customer who was willing to take a chance on the AC-DC shuttle cars because of Dansereau's reputation. Although the cars worked pretty well, the idea was still resisted.

26. Warner has stated that mining people who heard about the AC-DC shuttle car ridiculed the idea because they thought Joy had combined the worst reliable traction motor and the highest maintenance reeled cable. According to Warner, mining people thought it should be DC-AC, a DC reeled cable and

AC traction motors. Warner's statement is directed to economic and commerial factors of reliability and maintenance.

27. The evidence shows that whatever skepticism that the Joy AC-DC shuttle car may have met was directly soiely to economic factors such as maintenance and reliability. There is no evidence that the skepticism related to any technical reasons why one skilled in the art could not have made the claimed invention. The evidence of skepticism is not entitled to substantial weight.

C. *Expert Opinion*

28. Dr. J. Hilary Kelley, former Dean of Mineral and Energy Resources at West Virginia University, first learned of the Joy AC-DC shuttle car in the early or mid-1970s and was so impressed that he traveled to Joy's plant to learn more about it. Dr. Kelley considered the AC-DC shuttle car to be a revolutionary development. He planned to introduce information about the AC-DC shuttle car in classes for engineering students.

29. Dr. Kelley based his decision to visit Joy's plant on an advertisement in a mining journal. When he visited the plant, he did not witness an AC-DC shuttle car in operation.

30. Dr. Kelley stated that it was common knowledge that DC had advantages and disadvantages. DC traction is advantageous because it has the best characteristics for starting torque, and he believed that the disadvantages of DC are solved by features of AC equipment. According to Dr. Kelley, the idea of incorporating AC and DC into a single piece of equipment had its obvious advantages. He stated that there

was naturally a desire to have the advantages of AC control and the advantages of DC traction, so when the Joy AC-DC shuttle car was introduced, it was something of interest.

31. Dr. Kelley is a mining engineer with knowledge of mine electrical systems. He is named inventor on six to eight patents relating to underground mining. None of the patents deal with the electrical design of control drives for shuttle cars. Dr. Kelley has years of practical experience in underground mining. While he testified that he may have had sufficient academic credits for a bachelor's degree in electrical engineering, there was no showing that he was qualified in the area of control drives.

D. *Copying*

32. In about 1980, National Mine Service abandoned its original criticism of the Norris AC-DC drive and introduced an AC-DC shuttle car. NMS did not duplicate the circuitry of the original Joy AC-DC shuttle car.

33. An advertisement in the June 1979 *Coal Mining and Processing* magazine shows that FMC, another shuttle car supplier, introduced an AC-DC shuttle car in or before 1979. The advertisement does not show what, if anything, of the claimed invention was copied by FMC.

34. The evidence of copying does not have substantial weight. Nothing in evidence shows whether the claimed invention was copied or the reasons for the alleged copying.

JUDGMENT

In consideration of the Opinion issued this date, judgment is hereby entered in favor of defendant, Harry F. Manbeck, Jr., Commissioner of Patents and Trademarks, and against plaintiff, Joy Technologies, Inc.

☆ U. S. GOVERNMENT PRINTING OFFICE: 1992 312324 60005